

CHAPTER 2
REVIEW
OF RELATED
LITERATURE

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2.1. Introduction

Research is a very careful and scientific process of investigation, mostly with the help of several searches for new and different facts in the various branches of knowledge. It may be characterised as the scientific application of multiple approaches and the discovery of various problems based on that investigation. The review is a very important part of the field of research. A researcher cannot move further without reviewing related studies regarding research, which helps the researcher find out the problems. Redman and Mory (2009) defined “research as basically a very systematic effort to acquire new knowledge. The review of related literature provides the background and several technical bits of knowledge to the researcher. The knowledge of what is already done in the particular area of research regarding specific methods, tools for gathering the various data, and analysis of the result are keeping the investigators systematic in their endeavour”.

“Practically all human knowledge may be found in books and libraries,” according to Best (1977). Unlike other animals, which start from scratch with each generation, man draws on the information that has been gained and documented in the past. His continual additions to the immense wealth of knowledge enable advancement in all fields of human endeavour.

A review of the associated literature, according to Creswell (2005), is “a written summary of journal articles, books, and other materials that summarises the previous

and present status of knowledge, classifies the literature into subjects, and shows the necessity for suggested research” (pp. 79).

So, the literature review is mostly based on the classification, presentation, and evaluation of what other researchers have written on the specific subjects and provide an elaborate discussion on that particular topic. The review of related literature is also helpful for developing and upgrading the conceptual or theoretical framework.

The review of related literature helps the researcher do the research quite different from the previous research problems. It also helps avoid the repetition and replication of the problems taken by several researchers. The study of previous research works truly provides a specific and exceptional outlook for selecting the study area. It helps to build up a gap in the previous research limiting those problems and defining them very clearly and precisely.

2.2 Conceptual Framework

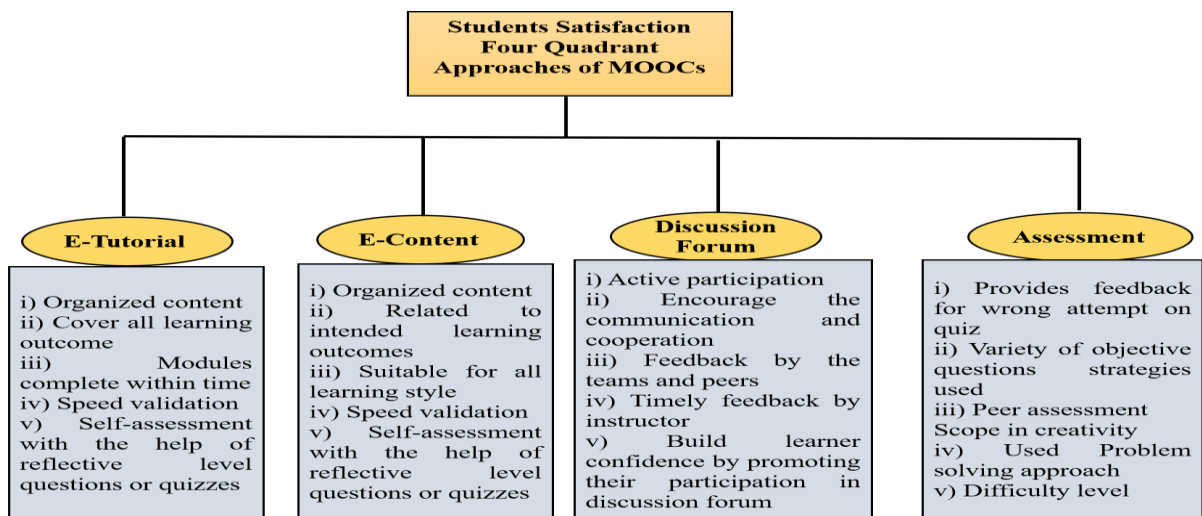
2.2.1 Student Satisfaction

Student satisfaction is conceptualized in terms of the four quadrants of MOOCs. Satisfaction is based on fulfilling one’s requirements and anticipation. It is basically the judgment of a pleasurable level of consumption that is connected to the total fulfilment of a person's life. It is broadly accepted as a desirable outcome (Motselisi & Mokhethi, 2019) of different experiences of products and services (Hossain,2018). It can be measured by the views of the pleasurable fulfilment of one’s wants and needs. Satisfaction is a state which is usually felt by a person who has already experienced performance (Ali et. al, 2016; Weerasinghe, 2017) or an outcome that fulfills one’s

expectation and service quality (Santiuste et. al, 2015). It is also an important parameter of the educational field of excellence (Fredericksen et al., 2019).

The four quadrants are generally associated with course design, which is a technique for designing high-quality learning environments and experiences for students. Students may access knowledge, acquire skills, and exercise higher-order thinking via purposeful and planned exposure to instructional materials, learning activities, and interaction. Course design aims to provide students with the best possible learning experiences in an atmosphere that is both supportive and receptive to learning and intellectual growth (Boyd et al., 2020). Student pleasure should be the basis for student satisfaction. The following is a list of them:

Figure 2.1 Conceptual Framework of student satisfaction



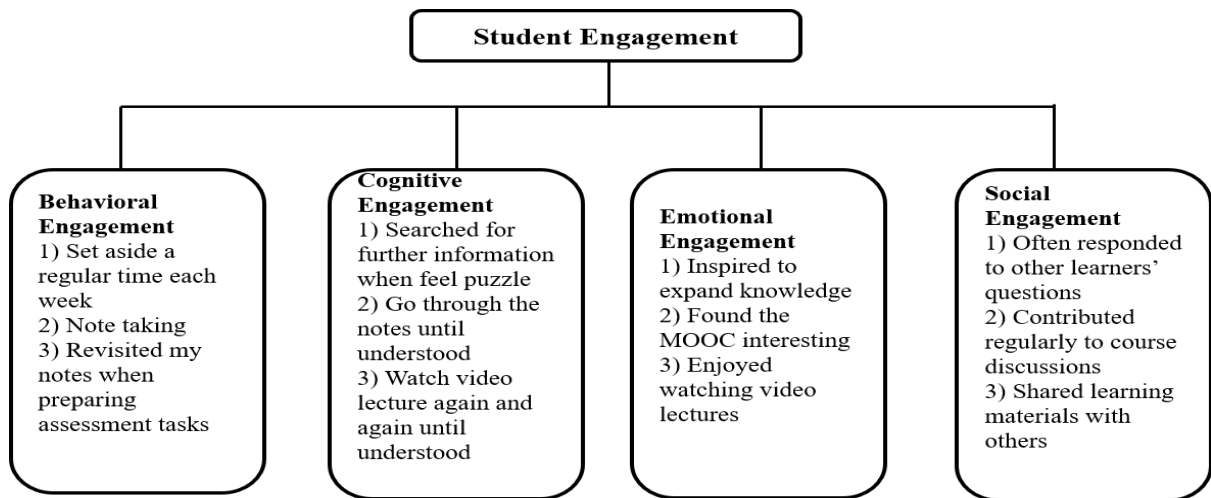
2.2.2 Student Engagement

Student engagement is defined from the perspective of persistence, self-direction, sustained inquiry, playfulness with content, and unprompted transfer of understanding (Heick, n.d.). There are four components of student engagement and the first finds that

engaged students must be attentive, in the sense that they pay attention and are entirely focused on the tasks associated with the work being done (Schlectly, 2009). The second component is about the student's commitment to their work.

They must participate willingly, that is, without the promise of extrinsic benefits or the danger of negative consequences, in the deployment of limited resources within their control, which are often time, effort, attention, and other resources that support the task's activity. The third component is related to the role of persistence of engaged students. They generally stick with the task even when the task presents difficulties. And the last and fourth component is that engaged students usually find the meaning and value in the different tasks that make up their work. As a result, student involvement refers to what a student brings to higher education in terms of specific objectives, ambitions, beliefs, and values and how they are formed and mediated by the student's experience. Students' participation is generated, co-produced, and recreated via the prism of their overall identities and views, as well as the meaning and sense they make of their experiences and relationships. In this research, the students' engagement is defined in terms of the following dimensions:

Figure 2.2 Conceptual framework of student engagement



2.3 Review of related literature on student satisfaction

Some of the relevant studies related to student satisfaction are given below:

Satisfaction is based on one's wants and expectations being met. It is essentially a judgement of a pleasant amount of consumption linked to a person's overall fulfilment. It is widely recognised as the desired effect (Motelisi & Mokhethi, 2019) of many types of product and service encounters (Hossain, 2018). It may be assessed in terms of one's satisfaction with fulfilling one's desires and requirements. On the other hand, it is essentially a post-consumption judgement (Asaduzzaman, 2013), which is assessed based on the consumer perspective of various goods and services (Siritongthaworn & Krairit, 2006). Finally, satisfaction is a feeling experienced by someone who has previously had a performance or a result that meets or exceeds their expectations in terms of service quality (Asaduzzaman et al., 2013).

It is also an essential criterion in the realm of educational quality. Student satisfaction is becoming a major challenge for higher education, particularly universities, and it has

been shown that student satisfaction is a major source of competitive advantage, as well as a source of student retention (Petruzzellis et al., 2006) and attraction for new students, as well as positive verbal communication. Higher education's long-term viability and survival relied on the quality of services provided and the efforts made to attain that, which differed from one higher education institution to the next (Arambewela & Hall, 2009; Aly & Akpovi, 2001; and Kanji et al., 1999). E-learning has recently emerged as one of today's educational system's most important learning strategies. Naturally, satisfaction in the context of e-learning refers to a particular student's attitude toward the e-learning system (Chen et al., 2004).

Determining user satisfaction is crucial in both higher education and business. The satisfaction metric must be applied to more than one attribute (Wang, 2003). E-learner satisfaction may be defined as a total of reactions to various e-learning activities (Wang, 2003). It is influenced by various factors such as user interface and content quality learning community, personalization, and learning performance. Oliver (1981) defined satisfaction as a succinct psychological state that occurs when the user's earlier feelings about the consumer experience are combined with the emotion around unmet expectations. As a result, while satisfaction is often articulated in an emotional, affective, and evaluative reaction, it does not have an uniform meaning (Kaul, 2016).

Student satisfaction may be described as the student's many perceived values and educational experiences at educational institutions (Horvat et al., 2013; Bolliger & Wasilik, 2009; Astin, 1993). There are still significant differences in students' perceptions of their online learning experiences (Muilenburg & Berge, 2005, p-29). Students' perceptions of their online learning experiences may influence their decision to complete the course and their overall happiness with their online learning

experiences (Carr, 2000; Kenny, 2003). According to the American Distance Education Consortium (ADEC, n.d.), student satisfaction is the most important aspect in continuing education. A variety of factors has impacted students' pleasure in the online learning environment. Students' pleasure is influenced by three major aspects, according to Bolliger & Martindale (2004)- the teacher, interaction, and technology (Hale & Petel, 2013). The other components are communication with all other course constituents, the course website, course administration difficulties, and the course management system. Furthermore, the correlation between students' judgments of task value and their self-efficacy and social ability, system quality, and multimedia teaching has been discovered as a highly important concept (Liaw, 2008; Lin, Lin, & Laffey, 2008).

Students must be confident in their ability to succeed in an online learning environment (Sloan Consortium, 2002). Students' contentment has also been connected to their academic achievement (Fredericksen et al., 2019). Furthermore, students' contentment is a crucial factor to consider while looking at the faculty of satisfaction. Student learning and instructor satisfaction are substantially connected (Hartman et al., 2000).

As a result, it is reasonable to conclude that student satisfaction is an essential learning component. When it comes to online learning, there is also a vital role. MOOCs are a sector that is getting much traction these days, and they provide a variety of courses via their different national and international platforms. Students are increasing the number of feathers in their academic cap. It offers credit scores that are essentially added to their higher education courses at the UG or PG level, and it has hosted a variety of curricular, skill-based, and continuing education courses. SWAYAM, or Study Webs of Active-Learning for Young Aspiring Mind, is a large national platform of the Ministry

of Human Resource Development and the Government of India that serves as an integrated portal and a well-known platform for hosting Massive Open Online Courses, or MOOCs. It has grown as a result of the NMEICT. The appropriate pedagogy delivers various courses depending on the specific courses. For its courses, SWAYAM uses a four-quadrant approach: e-content, e-tutorial, discussion forum, and self-assessment. This research is mainly concerned with MOOC content design.

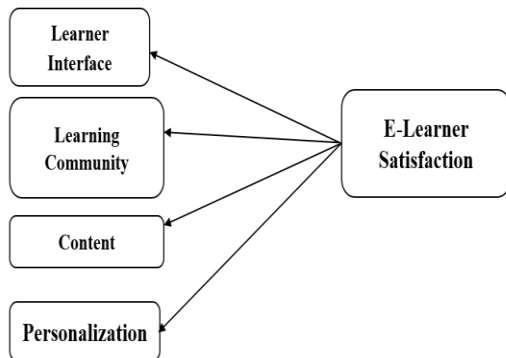
2.3.1 Models of Learning Satisfaction

i) Model of E-Learning Satisfaction (ELS)

In 2003, Wang was the one who came up with the E-Learning Satisfaction model. The four essential criteria evaluated in this technique are Learner Interface Quality, Learning Community Quality, Learning Content Quality, and Personalization Quality (Wang, 2003). Learning content quality is influenced by the degree of comprehending simplicity, supplying up-to-date information, and the contents that typically fit user roles. According to the International Data Corporation, “content quality customization is one of the most significant factors influencing end-user satisfaction, with a high preference for customised content” (Muntean, 2007). If the content quality cannot support the supply of personalised e-learning, the e-learning process would fail. Both portions are entirely integrated, which influences the cost and complexity of the e-learning system. The ELS instrument shows acceptable validity and reliability across a wide range of e-learning systems (Wang, 2003). Wang was the first to develop a comprehensive model and instrument for evaluating user satisfaction with an e-learning system (Tarigan, 2012). In this case, there are two main kinds of e-learning systems:

synchronous and asynchronous. Wang sought to construct the asynchronous mode instead of the synchronous mode in this circumstance.

Figure 2.3 E-Learning Satisfaction (ELS) Model



Source: Giray, 2021

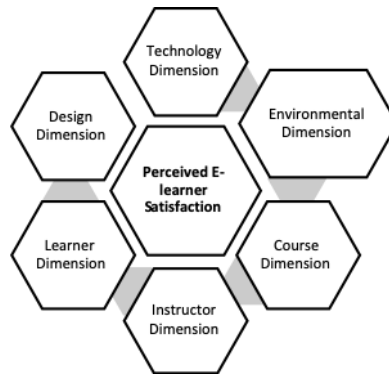
ii) The Acceptance Model for Technology (TAM)

The Technology Acceptance Model was developed by Davis (1989). It is one of the most important technologies adoption models. The two most important factors influencing one's willingness to utilise new technology are perceived ease of use and perceived utility. Usually, these affect students, and satisfaction emerged as the most significant parameter in studies trying to search the etimological relationship amongst the different variables and perceived satisfaction (Aebaugh, 2000). This model has three levels: the Deep level factor related to learning style, the Surface level factor related to gender, and the Cognitive factor related to online self-efficacy (Edmunds et al., 2012). On the basis of this model, different studies have happened and the researchers showed that there are different dimensions based on these three main pillars. The first one is ease of Used which is connected to easy to controllable, learn,

clear and flexible, understandable, easy to become skilful, easy to use (Sholikhah & Sutirman, 2020). On the other hand, Usefulness is connected to making the job easier, working more quickly, increasing productivity, effectiveness, improving job performance and useful and lastly, Student's satisfaction is connected to self-efficacy and enjoyment. On the basis of this study, the researchers showed one more dimension-education service quality, which is connected to reliability, responsiveness, assurance, empathy, tangibles. The first two parameters are independent variables and the last two parameters are dependent variables. Furthermore, the study found that ease-of-use impacts education service quality via students' satisfaction. Ease of use and usefulness influence education service quality via student contentment, and that the variable of student satisfaction may interfere with the effect of ease-of-use and usefulness on education service quality (Sholikhah & Sutirman, 2020).

Sun, Tasi, Finger, Chen, and Yeh (2008) looked at these elements that impact student satisfaction and the effects of perceived utility and simplicity of use (Ghazal et al., 2018). The research found that perceived ease of use substantially impacted students' satisfaction. The e-learning system delivers essential knowledge and assists students in their professional progress. Because of the simplicity of use of the e-learning system, students can devote their focus to studying the course topics rather than putting in the extra effort to master the instrument.

Figure 2.4 The Technology Acceptance Model (TAM)



Source: Jaradat & Al-Mashaqba, 2014

iii) Kano's Two-Dimensional Model

This model is basically based on customer satisfaction. This model helps the organization to understand the customer requirements (Chang et al., 2020). The Kano model is a famous instrument widely used to perceive customers' opinions to impact customer satisfaction (Wang et. al, 2010). Kano et al developed this model to classify the attributes of services or products and studied the connection between customers satisfaction and the functions of products or services. (Garibay et. Al, 2010). This model described the six dimensions of customers satisfaction. These are the following:

i) The first dimension is Attractive quality which is based on the quality of service is available, the consumers will be quite satisfied, but on the other hand, when the factors are lacking, the consumers will not be dissatisfied (Aref et al., 2012).

ii) The second dimension is that One-dimensional quality is available when the customers are satisfied and the higher degree of possession is satisfied more to the customers. On the other side, if it is not available, the customers won't be satisfied (Yang, et al., 2010). So, the supply of factors and satisfaction are linear.

iii) The third dimension is Must-be-quality based on the quality-of-service availability (Tontini & DagostinPicolo, 2013). Satisfaction is fully connected to this, otherwise, they get dissatisfied.

iv) The fourth dimension, Indifference quality, is based on the elements of the ministry that are available but are not responsible for the cause of satisfaction and dissatisfaction.

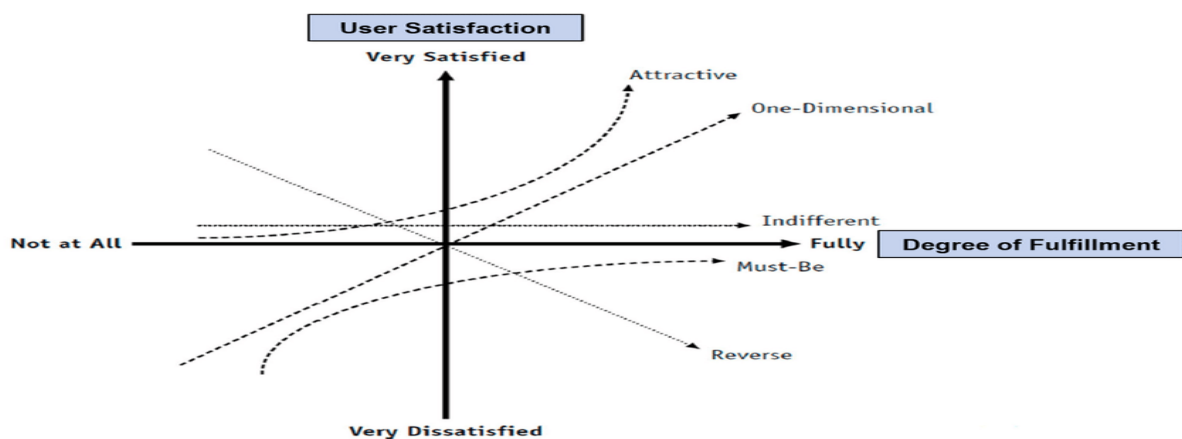
v) The fifth dimension is Reverse quality. The presence of this dimension is responsible for dissatisfaction and the absence of this dimension is responsible for satisfaction.

vi) The sixth and last dimension is Questionable elements and this is responsible when the customer or the information hasn't perceived the question hasn't been provided by the question is not sufficient or it can also happen when the customer is doubtful about the criterion (Chen et al., 2011; Wang et al., 2010; Garibay, 2010; Rashid et al., 2010 & Mirfakhrodini et al, 2009).

Arefi et al. (2012) showed in their study the application of the Kano model in the level of the quality improvement of higher education and focused on the level of satisfaction regarding the course materials. The data collection happened in two ways- functional and dysfunctional. This study showed that every dimension of the Kano model focused on the satisfaction or dissatisfaction of the students or customers. This model tried to identify and measure the better and worse values (Chen et al., 2019). The better value is basically achieved by adding up the attractive and one-dimensional quality and after that dividing by the sum by the total number of attractive, one dimensional, must be and indifferent responses.

On the other hand, worse value is achieved by adding up the one-dimensional and must be quality and divided by the total number of attractive, one-dimensional, must be and indifferent responses and put a minus before the answer (Chen et al., 2019). According to these two values, better value shows that the quality of improvement increases the student satisfaction level and on the other side, the worse value shows there is a lack of fulfilment of the quality, which decreases the level of satisfaction. So, user satisfaction is increased by content quality improvement (Gable et al., 2003). This study also showed that the up-to-date course material produced better value and students achieved a higher level of satisfaction.

Figure 2.5 Kano's Two-Dimensional Model



Source: Kano's Two-Dimensional Model (Kano et al., 1984, cited in Chen and Kano, 2011)

iv) The DeLone and McLean Model of Information Systems Success Model

DeLone and McLean developed the information system success model in 1992. This model seeks to measure a comprehensive understanding of information system success

by identifying, describing, and explaining the connection to the six most important and critical dimensions of success, which are commonly evaluated.

D & M Information System Success Model has six success dimensions. These are the following:

1) The first dimension is Information quality based on the content materials and this web content should be secured, complete, relevant, personalized, easy to understand. The satisfaction level is mostly related to this quality.

2) The second dimension is System quality which is based on the adaptability, availability, reliability, usability, and response time valued (for example, download quality) by the users of the e-commerce systems. So, this is also related to student satisfaction.

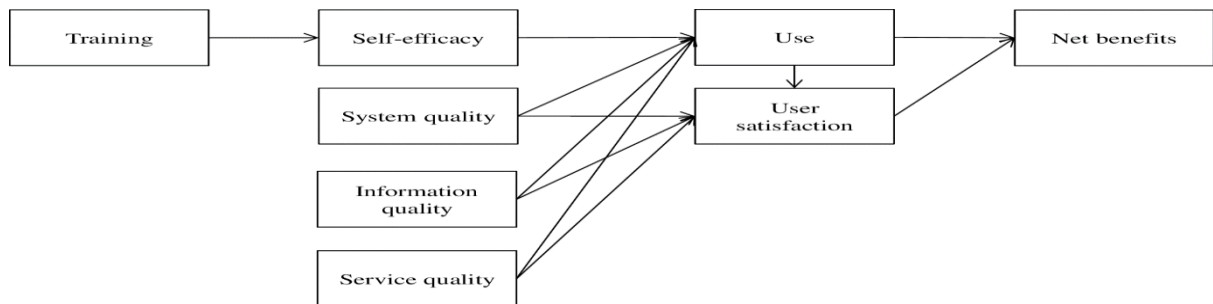
3) The third dimension is Service quality based on assurance, empathy, responsiveness. These are also depending on student satisfaction.

4) The fourth dimension is Use which is based on the navigation patterns, number of site visits, number of transactions executed, nature of the use of the resources. These are also providing the satisfaction of the students.

5) User satisfaction is the fifth dimension related to the customers' repeat purchases, repeat visits, and user surveys. These are also directly connected to satisfaction.

6) Net benefit is the sixth and last dimension of this model based on the incremental part, time savings, cost savings and these are also very beneficial for the level of satisfaction.

Figure 2.6 Information Systems Success Model



Source: Yu and Qian, 2018

To assess the performance of electronic health records in residential elderly care, researchers are developing a theoretical model and a questionnaire survey instrument.

Gable et al., 2003 presented enterprise system success assessment theory. Four parameters are somehow connected to the Information system success model. These are the following:

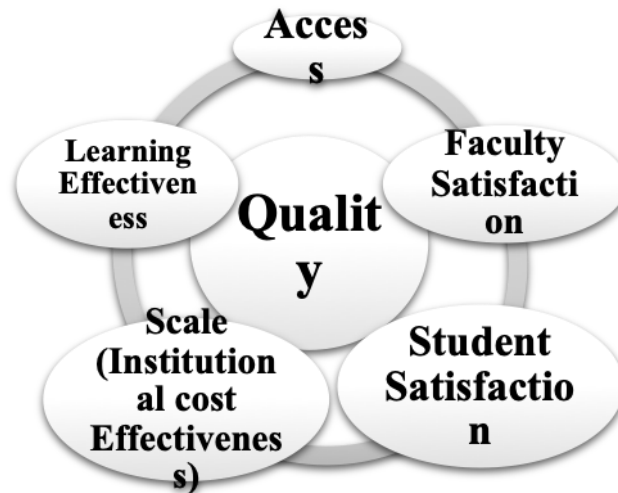
- 1) The first parameter is System Quality which is based on the ease of use, ease of learning, user requirements, system features, system accuracy, flexibility, sophistication, integration, customization. There are mostly related to the level of satisfaction.
- 2) The second parameter is Information quality based on Availability, Usability, understandability, relevance, format, conciseness. These are also fulfilling the satisfaction level.
- 3) The third parameter is Individual impact based on learning, Awareness or recall, decision effectiveness, individual productivity. These are the very important components of student satisfaction.

4) The fourth parameter is Organizational impact based on the organizational cost, cost reduction, staff requirement, overall productivity, increased capacity, e-government, improved outcomes, business process change. These are very helpful to fulfil one's level of satisfaction.

v) The Online Education Quality Framework

The slogan consortium (Slogan-C) framework, the online education quality framework, and the online learning consortium's (OLC) five pillars of quality online education are all different names for the same framework developed by the Online learning consortium. The framework's previous name was Slogan consortium (Slogan-C). The framework's objective is to assist diverse institutions in identifying distinct goals and measuring progress toward them depending on the progress of activities (Moore, 2002). The five pillars of excellent online education- access, learning efficacy, cost-efficiency, student happiness, and faculty satisfaction were the foundation for this concept. These five pillars' quality must be assessed regularly (Moore, 2002). One of the five pillars is student satisfaction. The framework's origins may be traced back to 1997, when Frank Mayadas, the president of the online learning consortium, said emphatically that any student in online education must get an education that reflects the provider's overall institutional excellence. These five interrelated aspects have created the Slogan consortium's (Slogan-C) framework, and any kind of institution may show the quality of these five interrelated areas- access, learning efficacy, cost-effectiveness, student satisfaction, and faculty satisfaction (Rajasingham, 2009. P. 60).

Figure 2.7 Quality Online Education's Five Pillars



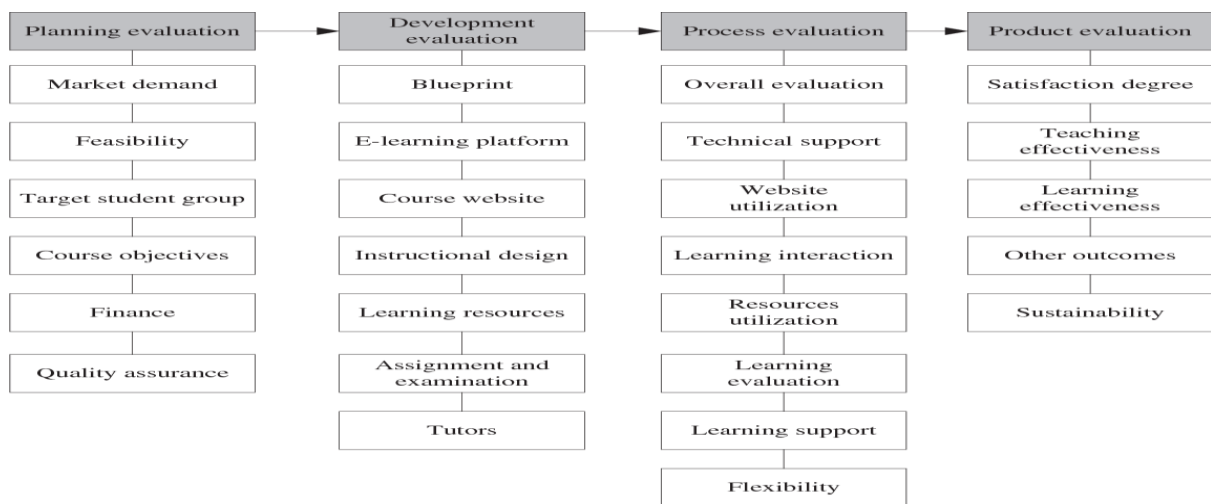
Source: Lee, 2010

vi) Building an Evaluation Model for E-Learning Courses

In the year 1960, Daniel Sufflebeam established the CIPP model for curriculum assessment in the subject of social sciences. Context, input, process, and product evaluation are all part of the CIPP paradigm (Zhang & Jiang, 2007). The researchers created an e-learning course model based on the CIPP concept. This methodology is used to assess the content resources for e-learning. Development evaluation, planning evaluation, process evaluation, and product assessment are the components of this evaluation methodology. In a nutshell, it's the PDPP model. Market demand, feasibility, target student group, course goals, funding, and quality assurance are all factors that go into the planning evaluation model. The course blueprint, e-learning platform, course website, instructional design, learning materials, assignment and test, and instructors are all part of the development evaluation. They discussed process assessment based on the overall course evaluation, technical support, website usage, learning interaction, resource utilisation, learning evaluation, various learning aids, and

flexibility. The last component of this strategy is product assessment, which is based on customer happiness, educational efficacy, other results, and long-term viability. The researchers chose some of the parameters for student satisfaction regarding e-learning characteristics, e-learning evaluation, and these 14 elements based on these four parts and 26 items- Virtual opening ceremony, Web site design, Lectures (video programme), Instructional design, E-learning course arrangement, E-learning study units, Communication with the mentor, Flexibility of learning, communication with peers, technical support, E-learning environment.

Figure 2.8 PDPP Model



Source: Zhang & Jiang, 2007

vii) Bigg’s 3P Model

The teaching and learning process depends on Bigg’s 3P model to some extent. The model was originally adapted from Dunkin and Biddle’s (1974) three modes- presage, process, and product. Bigg’s (1979) model mostly talked about these three aspects in the process of learning. These three aspects and its component are mostly connected to

the four quadrants in MOOCs and there are some reasons to choose this model as a conceptual framework of student engagement and satisfaction. These are:

The first aspect is rather an element connected to presage. It means the course provider in MOOCs and the instructor who plans the total course, as well as this element, is connected to the learner and platform also. The course provider in MOOCs can be anyone. There are many platforms that provide MOOCs to diverse learners and nowadays various also provide MOOCs to the learner throughout the world. The instructor has a very important role in MOOCs. Instructors influence the learners in several ways of learning, which helps them achieve several learning objectives. The learner is a very important part of MOOCs. It is because, without learners, the teaching and learning process cannot be successful. A huge level of diverse learners joins these courses and there are several reasons for joining these courses. Now the government of India has decided that some of the courses are mandatory for doing the students in MOOCs platform, like SWAYAM and after completing the course they will get full credit of the course and it will add with their results as well as they get the essence of online self-paced learning. Platform plays a very important role for any online course where students can engage themselves anytime, anywhere with any subjects. The course providers provide their courses through the platform only and it reaches learners all over the world. The platforms are SWAYAM, Canvas, Coursera, EdX, FutureLearn.

The second element is processed and this is connected to pedagogy and Instructional design. Its pedagogy mainly focuses on how the instructor leads diverse learners effectively and efficiently. The instructional design supports this kind of pedagogy to proceed further successfully. There are various steps in instructional design and the

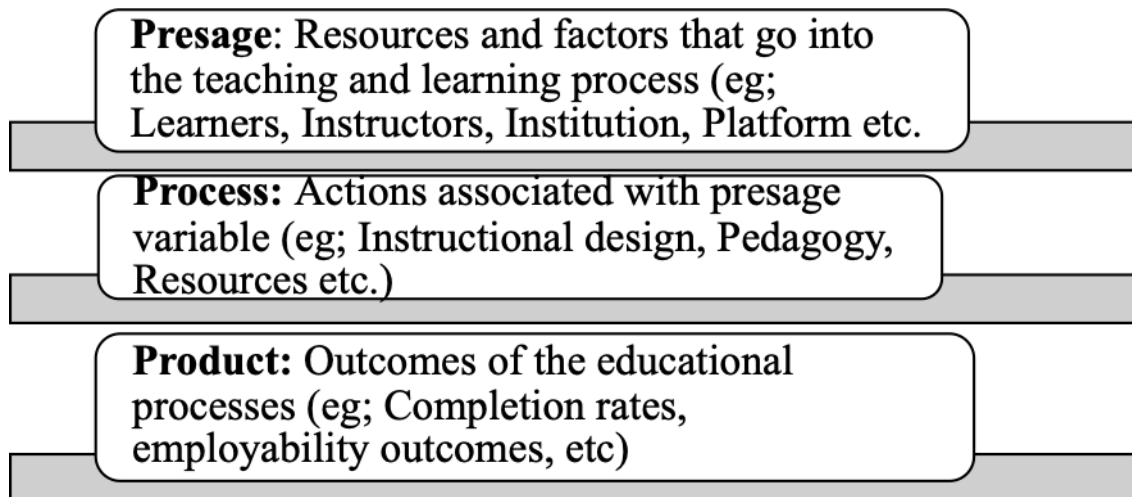
instructor should follow these very effectively (Hossain & Rahman, 2013). This design is mostly based on learning by doing and the instructor should follow the activity-oriented learning. It is basically a learner-centred model. The e-tutorial and e-content support individual learners and those web resources that are connected to acquire a deeper sense of knowledge and student will be able to understand the relation between old and new knowledge and it's called scaffolding. Interaction and collaboration also play a significant role in the four quadrants of MOOCs. The interaction between instructor to learner and learner to learner is a significant part of online learning. There is a relationship based on learners' participation in the discussion forum and the completion of the course (Gillani et al., 2013; Sinha et al., 2014). The students who perform well and have higher cognitive engagement related to the specific course mostly participated in the discussion forum. There are opportunities to provide strategic feedback to peers and instructors regarding various types of questions. The analytics of learning also plays a very important role in learning.

The third phase is based on the product and it's connected to the particular learner and their learning. Here the course provider and instructor check the engagement level of learners in the discussion forum, giving the answers to quizzes and a routine engagement with e-content and e-tutorial. Interaction plays a very important role in synchronous learning. It is mostly based on the outcome of the learning process. The instructor can also measure the rate of completion of the courses and the outcome related to the scope of employability regarding the particular course.

Therefore, it can be seen that the engagement of learners and their satisfaction regarding four quadrants in MOOCs is fully connected to Bigg's 3P model. It helps the course provider and instructor measure the student satisfaction level towards the

specific courses. The quality of a course also depends on this process. So, the researcher has chosen this model and she will connect all those steps with the courses and quadrants in MOOCs.

Figure 2.9 Bigg's 3P model



Source: Hood & Littlejohn, n.d.

2.3.2 Different Views of the Learner Satisfaction

E-tutorial: An online e-tutorial mostly helps and encourages the students to self-study. The student learns as well as gathers ample knowledge and participates actively. The instructor usually designs and teaches specific courses for certain learning outcomes. The whole study is mostly based on certain objectives. Sometimes there are some reflective levels and self-assessment questions which is also helping the students to achieve certain objectives of the course. MOOC is a platform where e-tutorial plays a very important role in completing any courses on a certain platform. Tarigan (2012) described the different perspectives of student satisfaction. These are based on “learner interface quality”, “content quality”, “personalization quality”, “learner support

quality". All the qualities are playing a very important role in student satisfaction. Learner interface quality is the basic requirement for any interactive system. If this quality is not sufficient, it hampers the methods of e-learning systems (Wang, 2003). This quality is based on different aspects and these are ease of use, stability of the system, ease to find out the contents and attractiveness, and including the use of various colours, fonts, text layout and it allows easy access to the content materials (Hisham et al, 2004), the model for learning session and identify what is important and what aren't (Allen, 2003).

On the other hand, Wentling et al, 2000 focused on user interface quality based on the overall look and feel of the e-learning system, the access of information to the learners. Zaharies et al, 2004 also focused on the instructional interface based on the course contents rather than focusing on how to use the learning contents (Lohr, 2000). According to Wang, 2003 focused on learner interface quality which is associated with the content design, usability, and stability of the e-learning system. He gave some indicators: the ease of use, stability of the several e-learning systems, ease of finding the content of users' needs, attractiveness related to the graphics, colours, and layout (Wang, 2003). Attractiveness plays a very important role in the e-tutorial system where students can pay their attention and interest properly (Hossain & Rahman, 2013).

E-content: The quality of e-content plays a very important role in an e-learning system. Without proper e-contents, MOOCs platforms cannot proceed further. Generally, the various types of content can be described as modules, learning objectives, and courses. Nowadays learning is based on student-centric and mostly technology-based. So, it can be said that the content should be designed very carefully for students and enhance student satisfaction. The quality of the content is added a

better and real value for the users (Azzam, 2006). Schramm (2010) also suggested that the satisfaction of e-learning depends on the content quality and it impacts on student satisfaction and the instruction related to the content should be very clear and distinct according to the course (George, 2004). Barron, 2003 also focused on content quality and its influence on student satisfaction with the personalized quality. He also said that students would choose the material quality that best suits their requirements. Each student has unique characteristics and expectations regarding the content quality that is more attractive to them and provides them with enough satisfaction in terms of course content quality (Barron, 2003). According to International Data Corporation, the amount of personalization on the content quality is the most important aspect in determining the user's level of pleasure (Muntean, 2007). Students will not be able to complete e-learning if the content quality does not allow for the delivery of tailored and personalised resources. As a result, the content quality goals should be highly clear and vivid, ensuring that students are satisfied and that the learning system's complexity is overcome (Muntean, 2007). According to Wang (2003), user satisfaction is largely determined by this quality, and he cited several indicators, including ease of understanding regarding explanations, up-to-date content, content that fits the user's roles and responsibilities, appropriate exercise and text, and links to other resources (Wang, 2003). Personalized quality is based on the demands and interests of the students, and it aids in the implementation of the perfect e-learning system design (Kahn et al., 2017). From basic to sophisticated, entire to portion, various approaches provide individualised e-learning quality. The level of complexity has a distinct impact on student happiness (Martinez, 2002). Wang (2003) found that the customization and personalization of e-learning course design meet the demand for student satisfaction.

The indicators are the material selected based on the needs of the students and provides adequate data (Wang, 2003).

Discussion Forum: A discussion forum is a very important part of any type of MOOC.

It mostly posts different the support quality to the learners is based on communication with support mentors which affects student satisfaction. The context of communication is based on the feedback and responses for e-learning through email and telephone.

Hisham et al, 2004 showed that the learner support quality based on the learning environment system which satisfied the learners. Warner, 2004 showed that automatic email support which mainly provides the related day-to-day information, is best for user satisfaction (Hisham et al, 2004). The learner support system can be in various forms, such as automatic email for the course enrolment and completion process.

Proper functional support from the coordinator is related to the total non-infrastructure support, like complaints about related issues of the particular course. The infrastructure support is related to the IT-Service desk and it is connected with navigation, networking, failure of accession, failure of user name and password (Lee, 2006; Siritongthaworn&Krairit, 2006). User satisfaction is based on that particular course's user perception and opinions (Doll et al, 1988; Xiao, 2002). The researcher used a self-made questionnaire for collecting information based on previous studies and theoretical framework. On the basis of data and statistical calculations, the researcher showed that the four dimensions of e-learning satisfaction positively impacted students' satisfaction.

Anne,2020 showed his views on student satisfaction, and the researcher chose four collaborative interfaces. These are learner-content interaction which is mostly related to the quality of learning experiences of the activities of the course aligned to expectations, learner-learner interaction which is basically based on the interaction with

the peer groups, learner-instructor interaction which is based on the interaction with the course instructor or mentor and learner-online platform interaction which is based on orientation programme to online learning (Marcia Anne, 2020).

Assessment: Assessment, the fourth quadrant in MOOCs plays a very significant role in the process of learning. The different parameters of student satisfaction included academic achievement, performance, perceptions of the particular learning environment, persistence, success, and quality of the instructional design, content, and delivery (Artino, 2007 & 2008; Bolliger & Martindale, 2004; Kuo, Walker et al., 2013; Kuo et al., 2014; Moore, 1989; 10 Puzziferro, 2008; Reinhart & Schneider, 2001; Thurmond, & Wambach, 2004; Yukselturk & Yildirim, 2008). Stewart et al., 2004 showed the various components and dimensions related to the students' online learning satisfaction. These are the evaluative construction for the involved issues of students like the appearance web page, facilities regarding navigation, relevant hyperlinks, several instructional techniques, pertinent content delivery, prospects, and the environment of interaction. Bangert, 2006 showed that the four elements related to the evaluation of the courses fall on online blended learning.

The elements are interaction, active learning, time on task and student cooperation (Dziuban & Moskal, 2011). On the other side, Yin, 2016 showed in his study that the perception of Chinese learners on MOOCs. Researchers showed that the aspect of instructional design of MOOCs contributes the most to user satisfaction or not. He found different aspects of the level of satisfaction on the basis of instructional design. He used a self-made questionnaire for the collection of information. He selected the level of satisfaction with the instructional design with the help of six dimensions. These are the content of the courses which is connected to the MOOCs and the sub-

dimensions are organization and structure of the course content, the richness of the content, up-to-date content materials, easily obtained course materials, the content meets the need of the user and the overall satisfaction of the learners. The satisfaction with the teaching methods is connected to some of the aspects and these are different methods of teaching, improvement of the ability on the basis of the course, whether the course is learner-centered or not, the course encourages communication and collaboration with the learners and instructors and overall satisfaction of the methods of teaching. The satisfaction with the evaluation and assessment process of MOOCs is related to the different evaluation methods, the effectiveness of the evaluation methods, quality of the grading system, quality of peer assessment, quality of feedback, quality of the final evaluation system, and the overall satisfaction of the assessment and evaluation process. Satisfaction with the discussion forums plays a very important role in MOOCs. There are different aspects, like the well-organized forum, the timely answer of the queries, helpful or not, participation activities, helpful discussion amongst the peers and mentors, and the overall satisfaction on discussion forums. The last dimension is satisfaction with the online learning environments. The different aspects of this dimension are simple interface, technical support, quality of the audios, videos, the other materials, methods of submitting assessments, ease of using discussion forums, and overall satisfaction. This research showed that almost 72% of the respondents are fully satisfied with the instructional design in MOOCs.

Yawson & Yamoah (2020) focused on understanding e-learning satisfaction in higher education from the perspective (Ghazal et al., 2018) of multi generational cohort perspective and tried to understand the students' satisfaction with the help of the four components of their experiences. The mentors provide course design based on the

details of the course outline, objectives of the course communicated, the tentative outcome of the learning shows the learners from the beginning, relevant and recent course content. The next dimension is course delivery which is based on the speaker's energy level and enthusiasm towards the topic, the sessions which are sequenced follow the course outline, the appropriate presentation of the topics, the coverage of the whole content throughout the session, achieved the outcome of the learning. The third dimension is course interaction based on the electronic forums available for discussion in e-learning platforms, fair and proper respect for student's interaction availability of the coordinators. The fourth and last dimension is the course delivery environment based on internet availability and proper infrastructure maintenance. Kumar & Kumar (2020) focused on the learners, satisfaction from MOOCs through a mediation model. They also showed that the level of learners' satisfaction is based on the content of the course, delivery of the content materials which is based on uploading the contents on time, pace, delivery of the contents by the mentor, assessment of the course, and different aspects of supporting the course. They showed that the content delivery and assessment significantly connected to the overall satisfaction level of MOOCs. On the other hand, course support was also found to be significant with the learners' overall satisfaction. According to the structural model of satisfaction, the relationship between course content and overall satisfaction is mediated by the course assessment and the course support is not mediating the relationship between the course delivery and the overall satisfaction (Kumar & Kumar, 2020).

Baldwin (2017), showed in his study of acceptance and adaptation related to online course design. Researchers showed that the course design directly impacts students' satisfaction. This study is basically highlighting the significance of the clarity and

vividness of course design, active participation in the discussion forum, and interaction with the instructor or mentor (Bradford, 2011; Paecher et al., 2010; Swan, 2001). The level of students' satisfaction has increased in online learning when instructors provide the proper feedback, communication is much more responsive, the instructional resources are relevant and the authentic activities play a very important role in online courses (Blau et al., 2017; Lee et al., 2011). Course design also influences the perception of the students in online courses as well as the satisfaction and the quality of learning. An effective course design originally emphasises interaction and communication amongst the learners and mentors. The online courses take more responsibility and time of designing the course materials rather than the face-to-face mode of learning. The transaction of online courses provides instructors with a proper opportunity to consider alternative instruction and assessment (Shea et al., 2004). This study is based on grounded theory. He had taken four parameters on the basis of students' satisfaction. The first parameter is online course design strategies and some of the aspects come under this parameter. Course design plays a very important role in student satisfaction, and navigation plays a major role in online courses. The mentor always tries to design the courses in the online mode that are very easy to navigate to get learners in front of the content. Navigation helps students to get the sessions very easily. Easy to navigate courses help the students and the instructors and it also helps the students to find information as early as possible and the course runs with more flexibility according to the participants. Chunking or breaking the contents related to the modules helps the students navigate the online courses. It helps students to understand the content materials very easily. The second thing is eye contact which plays a very important role in online learning. The third parameter is interaction with the peers and instructors on the discussion forum, asking different questions, getting

proper answers, active participation of each student is very important in online learning. The interaction basically provides a richer experience of learning for students. Online course design and the various teaching strategies help students interact on the particular course. Online education is more deliberate than face-to-face courses. The participants can understand the value of designing relevant and authentic assignments for online courses that facilitate the interaction between the student and the content (Stickney et al., 2019). Moore (1989) also identified the importance of interaction between student-student, student-content, and student-instructor (Cho & Cho, 2017). The study focused on student reflection on asking questions to one another in a purposeful manner and helping the learner learn collaboratively. It fosters interaction, provides feedback, facilitates learning and the course design organization. These same categories have been identified by Lewis & Abdul Hamid (2006). They showed that communication in online learning plays a major role in online education, the same result found by Christensen and Osguthorpe (2004). Roblyer & Wiencke (2004) also showed that the successful interaction of online learning provides better results, good experiences, and the course design objectives fulfilled by this. Pate et al. (2009) suggested that instructors should help the learners communicate in a better way and help them respond thoughtfully. Clark (1994) showed that instructional design is essential and provides a better impact on student satisfaction. The fourth parameter is a social order based on the online course environment where they can connect properly with their peers and the instructor. The behaviour pattern is different in online learning with respect to the traditional mode of learning.

Students get enthusiastic and more satisfied when they understand the communication between the instructor and students is very effective, they facilitate as well as

encourage the learners in their learning, organize the course in a very effective manner, the instructor shows interest in their learning and progress and evaluate students works accurately (Stickney et al., 2019). Marsh & Roche (1997) developed a complex model for identifying the student perception of satisfaction. The factors are the value of learning, the enthusiasm of the instructor, organization of the course, interaction with peers and mentors, coverage of the course, and proper assessment. Shea et al. 2003 study showed that feedback and interaction are significant for student satisfaction. The four factors related to student satisfaction- the student and instructor communication and interaction, amount of proper time on task, active learning, and cooperation with the peers (Bangert, 2006). Ice et al., 2007 showed that the students' perception towards the community and the instructor's presence in asynchronous learning with audio feedback in online courses. Gray & DiLoreto (2016) showed the effect of student satisfaction, engagement, and perception of learning in the online learning environment. They focused on the level of satisfaction concerning course structure and organization, the interaction between learner and instructor, and the presence of an instructor. Researchers used the mediation model (Baron & Kenny,1986; Shrout & Bolger, 2002) for measurement and cross-sectional design used for the survey method. This model also focuses on the course content structure, the interaction between learners, students' engagement with the level of satisfaction, and the students' perception of online learning. Course structure, learners' interaction, course organization are independent variables and student satisfaction is the dependent variable and student engagement is the mediating variable. The study found that the significance of course structure and organization is very important in the online learning environment and there is a significant relationship between learner interaction, student learning, and engagement with student satisfaction. So, the students'

satisfaction is a vital part of formal as well as non-formal education. Santiuste et. al, 2015 talked about the students' satisfaction with MOOCs and they mostly focused on the difference between formal and non-formal learning related to courseplanning, design, and assessment. This study showed that the students in formal education are satisfied with all these three parts, but on the other hand, in part of non-formal education in MOOC, students are not much satisfied with course planning, design, and assessment. Hew et. al, 2019 showed learners satisfaction in MOOCs and they focused on two main factors. These learner-level sentiment factors mostly focus on content, instructor, course structure, video, interaction, workload, difficulty, and course assessment. On the other hand, they focused on the course-related factors: the course schedule, different areas of MOOC courses, like arts or humanities, social science, science, technology, course design, and estimated course effort per week (Majumder, 2019). The study's findings are that the course structure, learner autonomy, and dialogue directly affect the learners' satisfaction, but the other factors do not fulfil the learners' satisfaction (Mondal & Majumder, 2019). In recent eras, many researchers have focused on MOOCs and the level of student satisfaction (Yousaf et. al 2017), but no comprehensive theoretical framework has been built regarding students' satisfaction in MOOCs (Hew et. al 2019). Though it can be said that the different aspects from different studies focus on the learners' satisfaction from various aspects, these are mostly related to the MOOCs platform.

Table 2.1 Different Dimensions of Satisfaction

Authors	Dimensions of satisfaction
Tarigan, 2012	Learner interface quality, Content quality, Personalization quality, Learner support quality
Stewart et al., 2004	Interaction, Active learning, Time on task, and Student cooperation
Marcia, 2020	Learner-content, Learner-instructor, Learner-learner, and Learner-online platform
Yin, 2016	The content of the courses, the teaching methods the courses used, The evaluation systems of MOOCs, The discussion forum, The online learning environment, The overall satisfaction
Yawson & Yamoah, 2020	Course Design, Course Delivery, Course interaction, Course delivery environment
Kumar & Kumar, 2020	course content, course delivery, course assessment and course support
Baldwin, 2017	Online Course Design Strategies- theme Navigation, Seeing online, Interaction and Social order
Dziuban et al., 2004	Learning value, Instructor enthusiasm, Rapport, Organization, Interaction, Coverage, and Assessment
Bangert, 2006	Student and faculty interaction and communication, Amount of time on task, Active and engaged learning, and Cooperation among classmates
Hew et.al, 2019	Learner level sentiment factors- content, Instructor, Course structure, Video, Interaction, Workload, Difficulty and Course assessment. Course related factors- course schedule, different areas of MOOC courses, like arts or humanities, social science, science, technology, course design and estimated course effort per week
Santiuste et.al, 2015	Course planning, Course design and Course assessment
Kuo et. al, 2014	Learner-content interaction, Learner-learner interaction, Learner-instructor interaction

Shea et al., 2004	Quantity and quality of interaction with instructor, Quantity and quality of interaction with fellow students
Swan, 2001	Course, Perceived learning, Perceived interaction with instructor, perceived interaction with peers, personal activity
Rajabalee & Santally, 2021	Overall academic experience, Achievement, online learning environment
Howson & Matos, 2021	Feedback on the Course, Feedback Overall, Academic Support, Academic Challenge, Student-Academic Relationships, Course Challenge, Assessment, Interdisciplinarity and Community Engagement
Sahni, 2019	E-learning, Classroom teaching
Bothaina et al., 2018	Academic dimension- course effectiveness, Skills and knowledge obtain Social dimension- Senses of belonging, Student interaction with other members Environmental dimension- Awareness and utilization of resources

All the above-mentioned studies showed that the students' satisfaction more or less related to the content design, learner interface quality, content quality, course structure, instructor, course structure, video, interaction, workload, difficulty and course assessment, course schedule, different areas of MOOC courses, like arts or humanities, social science, science, technology, course design (Hew et al., 2020) and estimated course effort per week, organization, learner interaction, instructor presence and communication, amount of time on task, student and faculty interaction, active and engaged learning, and cooperation among classmates, organization, learning value, instructor enthusiasm, rapport, interaction, coverage, and assessment, Online Course Design Strategies- theme Navigation, Seeing online, Course interaction, Interaction and

Social order, Course Delivery, Course delivery environment, course content, course delivery, course assessment and course support (Kumar & Kumar, 2020), learner-content, learner-instructor, learner-learner (Yu-Chun & Kuo1, 2014), and learner-online platform and these all are connected with the four quadrants of MOOCs with some extents. Different researchers also focused on some aspects that can identify the learners' satisfaction.

Students' satisfaction in learning plays a very important role in a different mode of the education system, whether online or offline. Satisfaction is basically depending on the maturity level of the individuals. So, it can be of various types and it has multiple dimensions. The E-learning satisfaction model basically connects with the interface quality of learners, several content qualities, and personalization quality. Content quality plays a very important role in students' satisfaction which is part and parcel of every learning. On the other hand, the Technology Acceptance Model connects with the learner satisfaction with self-efficacy through online and perceived ease of use (Jung & Lee, 2018) did not affect directly perceived satisfaction, and this was explained according to the individual experiences of learners and the maturity of the particular technology. It can be said that learning styles are also very important to determine specific learner satisfaction (Al-Azawei & Lundqvist, 2015). Kano's two-dimensional model talks about the learners' functional and dysfunctional parameters which are also directly connected to up-to-date course materials and the feeling of the individuals (Beelick, 2014; Pelletier et al., 2016). The Information System success model is also talked about the learning and their awareness to recall of the learners and it can be possible when they fully understand the course materials of that particular course and it also helps the learner to reach the ultimate goals of learning. PDPP model talks about

instructional design and it is one of the parameters of learning through online mode. Content design plays a major role in instructional design (Baldwin, 2017). These models are closely related to the students' satisfaction and different researchers gave their views on the basis of these models. A different study showed that students' satisfaction is mostly connected to the course design, course content, interaction of the course, learner and content relationship, course delivery environment. So, it can be said that the students' satisfaction mostly depends on the content design, and without this, any learning system cannot be established. Satisfaction of the students cannot be perceived directly, but it can be possible to share their views on the different aspects of the level of satisfaction.

2.4 Review of related literature on student engagement

Some of the relevant studies related to student engagement are given below:

In the present era, the learning method has been changed and teacher-centric learning has become student-centred. In the field of education, students' engagement refers to the degree of interest, attention, curiosity, perseverance, and values that the students basically exhibit when they are learning and being taught by the teachers (Abbott, n.d.). This originally extends to the level of inspiration, motivation, and commitment of learning, progress, development, and persistence in their way of learning. Student engagement is essentially the proper investment of time, endeavour, exertion and other relevant resources by both the students and their institutions intended to optimize the student various experiences of the students and also ameliorate the intended outcomes and development of students and their accomplishment and also the reputation of the institution (Trowler, 2010, p.6). It can also be said that the student engagement depicts

the willingness to participate in different activities in school which come under their routine, like attending different classes of different subjects, submitting the required work for different subjects, and also following direction which has given by the teachers in the classroom situation (Nystrand & Gamoran, 1992). The National Survey of Student engagement is a best practices survey related to the students' engagement. The survey basically asks the students to report on how they choose to spend their time in higher education, recognizing that some uses of time produce more benefits to the different students than others. There are five benchmarks are related to NSS, these are mostly; level of academic challenge, active and collaborative learning, students' interaction with faculty, enriching educational experiences, supportive campus environment (Mandernach, 2015). The basic concept of student engagement is based on some assumptions related to the constructive method, and it is a type of learning that influences an individual and how an individual participates in educationally purposeful activities. In the field of learning, we can see that there are joint propositions and these are mostly depending on the institutions and the instructors, who provide students with the conditions, opportunities, and expectations to become involved in the field of higher education. Moreover, the individual learners are ultimately the agents in the discussion related to engagement (Coates, 2005, p.26). Student engagement originally refers to the degree of attention, passion, optimism, interest, a curiosity that students basically show when they are learning or being taught, which extends to the level of motivation (Deng et al., 2020) they have learned (Glossary of education reform). Students' engagement also occurs when various students make a psychological investment in learning. Students also try hard to learn what their school offers. Students are most engaged when they are totally involved in their work, persist despite various

challenges and obstacles, and take the most visible delight in accomplishing their works (Wikipedia).

Sometimes we can be confused between the engagement and task students are connected with. The term engagement is basically pointed out that is active. It mostly requires that students be attentive as well as in attendance. It also requires the student to be committed to the task and find some inherent value in what they are being asked to do. The engaged students not only do the task properly which is assigned to them but also do it in the most diligent way and full enthusiasm and it is an important part of engagement in the field of education and the others. On the other hand, the student performs various tasks because they perceive the task to be associated with a near-term end and give value (Ranjan, 2001.p.64). An Australian survey of student engagement defines student engagement. This survey says that the students' involvement in different activities and conditions probably generates a high quality of learning (Coates, 2009) and it measures along with six engagement scales. These are mostly Academic challenges related to the extent that is often related to expectations and assessments challenge and connected to the students' learning. Next is the active engagement of learning which is talking about the multiple efforts of students to actively construct their knowledge properly. Then the interaction between the instructors or staff and students is mostly related to the level and nature of the student's contact with the teaching staff. After that, they enrich the experience of education related to the participation in broadening the different educational activities. The next part talks about the supportive learning environment connected to the feelings of legitimating within the education sector. The last part talks about work-integrated learning, which is mostly connected to the integration of work experience into the study.

Student engagement is defined from the perspective of persistence, self-direction, sustained inquiry, playfulness with content, and unprompted transfer of understanding (Heick, n.d.). There are four components of when a student can be engaged and these are, first and foremost, the engaged students must be attentive, in the sense that they pay attention and are fully focused on the tasks associated with the work being done (Schlectly, 2009). The second component is that the student must have committed to their work whatever they do related to their study. They voluntarily, which means without the promise of extrinsic rewards or the threat of any kind of negative consequences that deploy scarce resources under their control, and these are generally time, effort, attention, etc., which basically supports the activity called for by the task. The third component is that engaged students must have persistent. They generally stick with the task even when the task presents difficulties. And the last and fourth component is that engaged students usually find the meaning and value in the different tasks that make up their work.

Therefore, the students' engagement generally talks about what a student brings in higher education in terms of certain goals, aspirations, beliefs, and values and how these are shaped and mediated by the experience of the whilst a student. Students' engagement is created, co-created, and recreated through the lensed of the identities and perceptions which the students generally hold and the meaning and sense of the student put in of their experiences and interactions. As the shapers of the context of education, the educational instructors need to foster educational and purposeful students' engagement to support and enable students to learn in constructive and powerful and potential ways and realize their capability not only in education but in the field of society also.

2.4.1 Nature of Student Engagement

The student engagement is basically motivated behaviour is indexed by the different aspects of cognitive strategies which the students can choose to use and by their cumbersome tasks for regulating their learning behaviour (Gordon et al., 2009) (Pintrich & De Groot, 1990; Pintrich & Schrauben, 1992). The various natures of students' engagement are:

- 1) It helps to improve the process of learning and teaching. The more engagement of students increases, the more educational instructors involve them in various difficult tasks, which will help the brainstorming of the students.
- 2) It helps to make and develop the curriculum more authentic and relevant. The proper curriculum always improves the engagement level of the students.
- 3) Its assistance encourages participation and makes the students' practice more democratic as well as in a very authentic way. The students were engrossed in the various types of their work very easily.
- 4) It helps to maximize the ways of learning in the field of higher education. The learner is mostly motivated intrinsically and does each and every work related to the study very smoothly.
- 5) It develops a healthy learning environment in the field of higher education and also promotes meaningful learning.
- 6) It mostly monitors the student learning outcome. It avoids monotonous, boredom, passive learning, and a lazy environment in higher education (Ali et al., 2016) and it

also prepare the active, alert, and smart global students who can think critically, rationally, minutely, creatively.

7) Students commence their life with full of eagerness to explore the world around them with the help of the fullest engagement of their study.

8) The central part of learning is the proper engagement of students.

9) When students are ready to learn in each and every way, such as- physically, socially, emotionally, and intellectually, they learn better than the others. According to Bloom's taxonomy, every part of learning is connected to the cognitive, affective, and psychomotor domains.

10) Student engagement is the product of motivation as well as active learning. We called it an outcome rather than a sum total because it will not fall out if either element is missing.

11) Engagement increases every odd and end that any student of educational and social background notwithstanding will attain their educational and personal objectives, acquire the skills and competencies demanded by the challenges of the 21st century, and also enjoy the intellectual and huge monetary advantages connected with the completion of the degree of baccalaureate.

12) Every student is individually different (Haggis, 2004). Engagement is basically a concept that encompasses the perceptions, expectations, and experience of being a student and the construction of being a student in higher education (Bryson & Hand, 2007). Engagement also underpins learning and it works like a glue that binds it together and both are located in being and becoming (Fromm, 1977).

13) The most powerful and deep learning is needed very strong engagement of students and several aspects help them in proper learning, such as- interaction between students and instructors, courses and many more.

2.4.2 Models of Student Engagement

i) Construction of Learning Behavioural Engagement Periodic Feedback Model

This model is based on empirical data analysis and it provides periodic feedback from the perspective of engagement. This model defines various dimensions, such as sustainability, initiative, reflection, and concentration, which mostly represent the behavioural engagement of learning. This model includes three levels- learning behavioural engagement, periodic feedback, and information exchange activity. The main part of this model is based on behavioural engagement. The middle layer is based on periodical feedback. The outer layer is based on the information exchange activity. The first layer is connected to the paradigm shift of the concepts and the change of learners' cognitive structure. The middle layer is connected to individual learning and also generates and maintains a higher level of learning behavioural engagement. The outermost level is connected to the continuous cohesion and reorganization of the behavioural sequence of learning that comes under the influence of subject, object, community, tool, intermediary, mixed learning environment, and the other factors to meet the needs of the learning very purposefully. The first and the middle layers interact between each other and the gradual flow of the middle layer is organized into the four elements. These are sustainability based on plans, behavioural strategies, execution of tasks, and evaluation. The various changes and reorganization of different elements in the middle layer mostly reflect on reflection- control over the plans,

behavioural strategies, and execution of tasks. The interaction between the middle and outer layers is mostly connected to the initiative that regulates periodic feedback and information exchange activities.

There will be no fulfilment of the previous elements without concentration. This model was originally based on the different patterns of engagements. Factor analysis is mostly used for the study to extract the principal components of variables and also regression method is used for the calculation. Moreover, the correlation coefficient between the different scores for each factor and learning results are calculated. According to the dimension activity index proposed, this model is basically relevant with the engagement and it describes behaviour engagement very clearly.

ii) Learner-Centric MOOC Model

The LCM model mostly consists of four aspects and these are Learning Dialogue (LeD), Learning by doing (LbD), Learning Extension Trajectories (LxT), and Learner Experience Interaction (LxI) and to combine all these aspects, a new dimension has been created which is Orchestration, it mostly shows the overview of LCM model (Murthy et al., 2018).

Learning Dialogue (LeD): It is mostly connected to e-tutorial, where short videos are there and learners can get the opportunity for a strategic pause point where the authority asks a question. It is important because active participation is an essential part of learning and through these, learners can recall, apply and evaluate the content and frame a proper answer without the help of others. The instructor also relates and anticipates the learners' responses and summarizes answers in the following parts of

the video. This pause point is called Reflection Spot (RS), which mostly prevents passive watching of the videos (Murthy et al., 2018).

Learning by Doing (LbD): It is mostly used for activities related to assignment and practice activities. LbDs normally follow Led and ungraded practice questions make these. They provide an opportunity to unify content explained in the Learning Dialogue. Formative feedback is provided to the learner for enhancing learning. It must be mentioned in the feedback and what kind of mistakes they make and how they improve it. Learners can achieve their ultimate goal through this and it must facilitate their learning (Murthy et al., 2018).

Learning Extension Trajectories (LxT): It is mostly connected to the extra resources provided by the authority. The student gets many related videos, content, web pages, and even research papers. These resources are categorized into two parts. The first part is related to the interest of learners. In order to amalgamate the notion in trajectories, learners must complete an amalgamation quiz depending on the trajectory they have selected (Murthy et al., 2018).

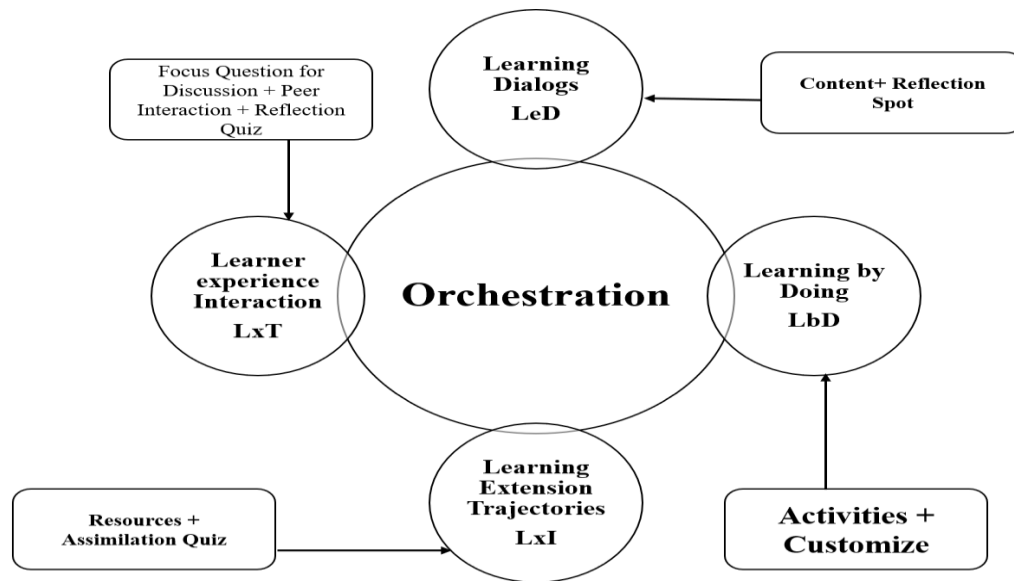
Learning Experience interactions (LxI): It is mostly connected to the discussion forum in MOOCs. There are some issues related to the scattered conversation, lack of significant participation, and meaningful interaction. The LxI design is mostly connected to overcome all those challenges and bring the learners into a discussion forum with the help of focus questions (FQs) which prevent scattered conversation and anchors discussions around a specific topic. Focus questions mostly drive the learners into the forum and participate in sharing their views, perception, and experiences and interacting with other learners and mentors on the forum. The graded reflection quizzes

(RQs) are based on the interactions on the discussion forum, thus incentivizing the level of participation and perusal of the post of different fellow learners. Learning experience interaction fosters the collaborative type of learning and creates an extra added learning resources pool within the course that is monitored and moderated by the course instructor, associates of teaching, and discussion forum moderators (Murthy et al., 2018).

The orchestration mostly connected to all the elements which are mentioned earlier and these all are created LCM principles in MOOCs. This is mainly measured and monitored by the learning process using learners' performances and reports. This allows periodical knowledge of various challenges encountered by participants. The appropriate measures are basically done to address the various challenges, such as providing a flexible time of live streaming of live interaction, when necessary, an extension of the mentioned deadlines, and reminder emails and text messages personally, which encourage more participation and also help to overcome the transactional distance envisaged in an online learning course. The implementation and orchestration of the LCM model require dedicated personnel and time commitments. This can be made possible by combined efforts of a larger course team comprising multiple focused groups or several communities (Murthy et al., 2018).

This model is dynamic and open to illustration by the course creators looking to enhance the different learning outcomes and moreover, there is a scope for modifying the model of evaluation of elements. The model also lends itself to customize across several domains and diverse learners and has opened up research avenues (Murthy et al., 2018).

Figure 2.10 Learner-Centric MOOC Model



Source: Murthy et al., 2018

iii) Pedagogy of learner Experience Interaction (LxI):

The nature of MOOC pedagogy is mostly amplified from being instruction-focused which is mostly teacher-centered and after that, the focus has converted into learning which is based on learner-centered (Conole, 2014). The technology affordances of discussion forums in the platform of MOOCs further extends the pedagogy’s nature for utilizing connectivist principles of autonomy, connectedness, diversity, and diversity (Downes, 2010). The pedagogy of learner experience interaction is mostly designed as a learner-centric MOOC pedagogy to enhance peer-connect to fulfil the aims of peer learning by incentivizing participation and anchoring in the discussion forum. Learning experience interaction mostly consists of three main organizing elements. These are:

- 1) Firstly, the instructor created a focus question to anchor discussions in the MOOCs platform.

2) Discussion forum is normally driven by MOOC learners and facilitated by course staff as per the learners' needs.

3) The instructor mainly connects reflection quiz to incentivize the mode of discussion. It exhibits the dynamics of learner experience interaction with the role of each MOOC platform highlighted. The instructor creates several focus questions and rules of interaction to proceed with the discussion. While framing the focus questions, an important discretion is to permit sufficiently different views from the MOOC learners to generate a shared platform. The preliminary role of facilitators in MOOCs' discussion forum is to ensure that discussion does not lead to pertinacious assistances. They are also encouraged to post their views and involve in a discussion forum with the MOOC learners. The reflection quiz is graded different activities following the discussion given below:

iv) Effectiveness of Learner Experience Interaction: Learners' engagement in discussion forums refers to the engagement of individual learners in discussion forum activity. When many learners engage in discussion forum activities in MOOCs, it is expected to lead to larger peer-connect. The learner engagement in MOOC was appraised through the number of discussion forum participants and the number of posts in the forum per week and the percentage of the active learners of the particular course who were forum participants.

2.4.3 Different Types of Student Engagement

Engagement in MOOCs is usually measured by whether learners complete learning activities or not, such as- watching lectures and submitting assignments. Low engagement is used as an indicator of at-risk learners. Nevertheless, studies of school

engagement have mostly proposed that engagement has three components and these are behavioural, cognitive, emotional and the others are participation or interaction engagement, transition, peer, social engagement, skill engagement, academic, student-staff, intellectual, online, emotional-peer relationship, beyond class, emotional faculty relationship engagement. To explore and measure the importance of cognitive engagement in MOOCs, researchers need to measure both the behavioural and cognitive engagement in MOOCs. The engagement also shows whether cognitive engagement adds other information that is beneficial in predicting academic achievement as well (Pelletier et al., 2016).

One of the main areas of the most commonly examined indicators of the teaching-learning process is student involvement. While it has the desired aim, defining it is difficult, therefore it is expressed in various ways, including student pleasure, enjoyment, interest in learning, classroom participation, persistence, and so on. Participation is often assessed using various methods, including surveys, observations, and interviews, each of which focuses on a different component of engagement.

Several authentic, validated, and reliable survey instruments are available to assess students' cognitive and behavioural aspects of students' engagement. There are different studies based on classroom engagement measures with the help of direct observation of students' behaviour in using the observation protocols (Kothiyal et al., 2013). This study is based on Deng et al., 2020 observation method with the help of measuring classroom engagement of the students and it gave a rich and clear picture to the researcher and after that, triangulation is used with observation data with a survey of the learners as well.

Behavioural Engagement: Most studies discuss learner engagement in MOOCs, which focused on behavioural (Deng et al., 2020) engagement in several academic activities. One of the most commonly used engagement MOOC indicators is participation in lecture watching, time spent on lectures, submitting weekly assignments, and the relationship between engagement and dropout (Chung & Mathew, 2020). It also refers to the participation of the students in several learning activities, like asking questions, completing projects (Fredricks et al., 2004). Researchers tried to investigate MOOCs behavioural engagement for discrete learning activities (Seaton et al., 2014), like using several videos for learning and notetaking (Veletsianos et al., 2015). Some of the studies have also documented behavioural engagement with several activities, tasks, and materials, which appeared as the pattern of progression (Moskal et al., 2015), the pattern of participation, and the pattern of using the course components (Campbell et al., 2015).

It aligns with the original model of engagement (Reschly & Christenson, 2012), which describes the draws on the idea of participation; it also includes student engagement in the field of academic and social or extra curricular activities as well as it is considered very crucial for achieving the positive outcomes and preventing the process of drop out (Fredricks et al., 2004). This engagement is also connected to participation in discussion forums, viewing lectures, following course activities, the number of times students accessed course wiki pages (Li et al., 2015; Santos et al., 2014; Sinha & Cassell, 2015) in MOOCs. The behavioural criteria also discuss active responses to the learning task presented.

Cognitive Engagement: It refers to the psychological investment in learning and various ranges of memorizing to use self-regulated strategies to promote students'

understanding. According to the study of Barlow et al., 2020, Cognitive engagement can be measured by how often students paused the lectures while they watched it in MOOCs. Some of the studies tried to explore the possibilities of using the video lecture clickstream data, the record of student clicks several events, and to measure cognitive engagement. Amongst all the click events, the several pausing events may indicate a higher level of cognitive type engagement. Sometimes, cognitive engagement explains the mental investment of the individual in learning of including the various complex ideas and master severe skills (Blumenfeld et al., 2005), and this is also related to the relevance or value, goal setting, self-regulation, strategizing as well as asking the question. MOOCs learners have mostly explored cognitive engagement by, exploring the influence of the learners' present role on self-regulated learning behaviour, which is basically indicating the learners who were mostly working as a data professional or studying for higher education qualification are appeared to be more self-regulated than those who are not (Deng et al., 2019; Hood et al., 2015). Cognitive engagement sometimes refers to the motivational goals of different students and self-governed learning skills (Christenson et al., 2012; Fredricks et al., 2004; Reschly & Christenson, 2012). Many research primarily focused on linguistic indicators, such as narrativity of text or cohesion connected to cognitive engagement, obtained from learners' different artefacts (Wang et al., 2015) concerning MOOCs. Therefore, it can be said that the MOOCs must account for the better quality of discourse as a representative for students' cognitive engagement. Cognitive criteria have mostly indexed the limitation to which students are mostly attending to and increasing the mental effort in the learning tasks might be encountered.

Affective engagement: Student engagement envisages their affective responses in the classroom situation, identifications of schools, valuing the method of learning, and the different sense of associating as factors that mostly characterize the affective engagement.

Emotional engagement: It mostly refers to the several feelings or different emotions of students towards teachers, other peers, or various modes of learning (Fredricks et al., 2004). The affective reactions are mostly based on attention, interest, boredom, happiness, stress, sadness, anxiety, and taking a course (Connell & Wellborn, 1991; Skinner & Belmont, 1993).

Participation or interaction engagement: It refers to the participation of diverse students in MOOCs platform and interaction with peers and instructors (Fredricks et al., 2004). It is also connected to learner-centred interactions in the mode of online learning environments, which affect the various ways related to students' experience in the course (Parker, 2013). It basically provides the students with a conceptual pellucidity to facilitate a good understanding of students' engagement in MOOCs.

Social engagement: It refers to the interaction between diverse students and their teachers as well. Students need to be ready to interact with their peers where student stats initiate interaction. Social engagement plays a very important role in learning, whether it will be offline or online. Moreover, students can engage in negotiation as well as scaffolding and gain the quality of interaction outside the classroom.

Academic engagement: It is mostly based on the students who spent time on several course activities, such as viewing the uploaded pages, pdfs, ppts, engaging with weekly quizzes, and various assignments (Appleton et al., 2006 and Reschly & Christenson,

2012). It is also connected to the number of days, weeks, and hours that are being engaged with a specific course, assessments, like homework and quizzes. Moreover, the rate of completion and accuracy, credit towards the completion of courses, and result of the post-test (Boyer & Veeramachaneni, 2015; Li et al., 2015).

Sun & Bin (2018) showed the features of learning behavioural engagement generally affect students' persistence and diverse learning achievement. Though the actual driving force of student actual performance, behavioural engagement indicated more active performance, extending an effective behaviour state. This study is mostly based on behavioural engagement which usually focuses on the adaptive adjustment process of different learners to appraise the exchange activities. The concept of MOOCs in the classroom is unique and it has different educational significance and virtuality. The main purpose of their study is to explore an automatic type of evaluation model for students learning based on behavioural engagement based on the behavioural data on MOOCs. So that a foundation for monitoring can be established in an extremely intelligent manner, and various individualised support of learning behavioural engagement may be provided. Behavioural engagement in the process of learning is based on several factors and these factors affect academic achievement, reforms of the teaching method, reflects the degree of support, and the promotion of students learning in various educational institutes. Miles also worked on this engagement and referred to the involvement in the task on time, the persistence of learning tasks, participation, and effort, which was sometimes individually or simultaneously related to the cognitive ability and academic achievements (Miles & Stipek, 2006; Li & Lener, 2013). This study is connected to the construction of learning behavioural engagement periodic feedback model and plan, behavioural strategy, task execution, and evaluation are

connected to sustainability, reflection, initiative, and concentration. This is an empirical study based on exploratory factor analysis and confirmatory factor analysis. As per the data analysis and result, the four main parts of the model are reasonable for measuring the behavioural engagement of the learners in MOOCs (Bolliger & Wasilik, 2009).

Philip et al., (n.d.) describe that how the production of several types of videos affects student engagement (Guo et al., 2014). It was an Empirical Study of MOOC Videos production decisions that affect student engagement in online educational videos. They used mixed method research for their study (Arbaugh, 2000). They tried to measure engagement by how long students watched each video and whether they attempted to answer post-video assessment problems. They used 862 videos, 127,839 Samples, and 6,902,358 watching sessions for data collection. They discovered that shorter videos are far more engaging, that informal talking-head videos are far more engaging, that Khan-style tablet drawings are far more engaging, that even high-quality pre-recorded classroom lectures may not make for engaging online videos, and that students engage with lectures and tutorials differently (Pathak & Mishra, 2021, Rummler, 2017). Video Production Affects Student Engagement (Guo et al., 2014). It was an Empirical Study of MOOC Videos production decisions that affect student engagement in online educational videos. They used mixed method research for their study. They tried to measure engagement by how long students watched each video and whether they attempted to answer post-video assessment problems. They used 862 videos, 127,839 Samples, and 6,902,358 watching sessions for data collection. They discovered that shorter videos are far more engaging than casual talking-head videos, Khan-style tablet drawings, and even high-quality pre-recorded classroom lectures that may not make for

interesting internet videos. Students attend lectures and tutorials in various ways (Mokhethi & Malunga, 2019).

2.5 Studies Based on Student Satisfaction and their engagement

Gray & DiLoreto (2016) showed in their study based on the several effects of engagement of the student, satisfaction, and perceived learning in the online learning environment. The researchers tried to investigate the different relationships amongst the structure of the course, organization of the course, the interaction between learners, engagement of the students, and instructors that are present on student satisfaction and the perceived learning. The researchers used a cross-sectional design using a survey method and there were 187 participants from the graduate level. Based on six hypotheses, the result was shown that the three factors related to hypothesis affect students learning. Course structure, the interaction between learners, and the presence of instructors all had a significant effect on the process of learning. Moreover, this was fully mediated by the cognitive engagement of students. On the other hand, another three hypotheses related to the factors affecting learner satisfaction are course structure and the presence of the instructor had found a significant direct effect. But the learner interaction did not have any significant effect on student satisfaction. There are three types of interaction: learner-content, learner-learner, and learner-instructor. The learner-to-learner interaction severely impacted student satisfaction (Kuo et al., 2013, p. 30). On the other side student engagement partially intercede the instructor's presence on student satisfaction.

Rajabalee & Santally (2020) mostly focused on their study based on learner satisfaction, engagement, and perception related to the online module and its

implication based on institutional e-learning policy (Sholikah & Sutirman, 2020). It's a correlational study that is based on 665 samples. Researchers used exploratory research for student engagement. They analyze the engagement based on psychological aspects. They focused on student acquisition of various new skills and several types of competencies (Majid et al., 2019). Study based on mixed-method research. Researchers mostly focused on students' overall academic achievement and experiences (Gunning, 2000). The student report based on the perspective regarding the achievement of learning outcome, the process of learner support, which included the tutor as well as peer support, the learning strategies and ways of tackling the various activities, and the encounter of different learning difficulties and how they engage in the process of resolving and tried to overcome different challenges (Delone & Mclean, 2014). The result related to satisfaction and engagement was weak, but there was a significant positive correlation between satisfaction and engagement with the overall performances. The feedback analysis revealed that the difficulties regarding technology and lack of instructor support created obstacles in front of them.

2.6 Research Gap

The perspective of the present study can be understood from the forty-two review of related literature review in the given chapter. After reviewing several research studies, the researcher came to enrich the thoughts and ideas in the related field of the study. The researcher also developed ideas related to research methodology that must be applied in the present research. Furthermore, it has enriched the researcher with a great theoretical perspective that mostly helps in framing various objectives, selecting the technique of sampling, developing tools, the procedure of data collection, and finally stating the research findings. All these considerations helped the researcher avoid

repetition and duplication of the particular research work. Although there are many studies on students' satisfaction and student engagement in massive open online learning from different aspects, there is a vast scope for investigation concerning student satisfaction with respect to the four quadrants in MOOCs and student satisfaction from various aspects.

In most of the studies, questionnaires and various scales were used for collecting data. The analysis of percentage, ANOVA, t-test, standard deviation, mean, and coefficient correlation was used for data analysis.

From the available resources and the knowledge of the researcher is concerned on the review of related literature, the researcher did not come across any research work undertaken by neither Indian nor international level studies on student satisfaction and student engagement in massive open online courses (Yin, 2016).

Most of the studies adopted questionnaires to collect data and statistical methods for analyses. That literature showed that in many cases, the user did not use various tools for their information seeking to its full extent. The studies reviewed in this chapter enable the researcher is going to conclude that:

- i) Most studies are based on a single discipline and specific platforms.
- ii) Most of the studies are based on satisfaction and engagement separately or had been examined together, but a lack of studies combine the two variables in MOOCs in the Indian context.
- iii) There is no standard tool-related for measuring student satisfaction.

iv) Most of the studies focused on the issues related to course design and interaction between instructor, learners and contents.

Therefore, the researcher has decided to undertake the topic for his research on “A Study of Student Satisfaction and Student engagement in Massive Open Online Courses” and hence the investigator has taken this as a research problem for the present study. The researcher applied the descriptive survey method and convenient sampling for selecting the sample. The researcher hoped that the study would prove to be a valuable contribution to the research field in the context of MOOCs.

2.7 Conclusion

The systematic review of related literature is the heart of the entire dissertation, other than a simple and small step is taken to complete the work. A proper and rigorous review of related literature is required for the proper justification of the research which the researcher takes. It is mostly related to the previous knowledge of the researcher connected to the research problem taken by the researcher that originally helps in fulfilling the gap between the former and the new as well as significant research problem. It also provides a theoretical and conceptual framework to the researcher. Moreover, these reviews give light to researchers for selecting the relevant methodology of the research. The study of related literature also helps researchers develop and generate a new theory and new methods for having proper knowledge that has been already done and mostly covered previously.

The review of related literature gives a proper insight to the researcher in any field and provides a proper guide to the suitable research problem and a proper methodology. Hence, the researcher reviews several fields related to the variables and quests for a

relevant insight to frame a research gap. Finally, the researcher must fill the gap by attempting the present study. The next chapter describes the methodology of the study.