

Development of collaborative Interaction scale through web based learning for B.Ed. Student Teachers

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ABSTRACT: Web-based collaborative learning assist the learners to complete their studies through web. The web -based collaborative learning style helps to promote the students' cognitive activities, improve their abilities of resolving and dealing with the problems. This paper explores the procedure about developing and validating the scale to measure the collaborative interaction in web-based learning course from the student -teacher of B.Ed. programme. The tool comprises 30 items. Validity of the scale was established by the suggestions of experts. Reliability of the scale was established with the help of Cronbach's alpha technique as a result of the item analysis carried out for item selection.

Key words: collaborative interaction, web -based learning

Introduction:

Web-based learning environment allows student to interact with others synchronously in collaborative and environments. In online learning, interactivity has been considered "the most striking characteristic of computer-mediated communication and the factor with the greatest potential to have an impact on learning" (Marra, Moore, & Klimczak 2004). Collaboration promoted and supported by instructional technology to lead learners to deeper understanding and knowledge building. However, online learning environments as a medium for productive learner interaction. Discussions throughout the critical thinking in online discussion were taken to a entire new level. The ability to think critically versus the inclination to think critically constitutes that difference (Kim, et al 2007). Online discussion boards are encouraging to fostering students' critical thinking skills, strong evidence suggests it is a learning environment suitable with possibilities for doing so. social learning or learning as part of a group is an important way to help students to surge understanding in collaboration and develop skills in co-construction of knowledge (Brindley, Walti, & Blaschke, 2009). Online learners face a number of specific challenges to achieving success in online learning environments (Michael & Jian 2016).

The web-based learning environment has developed in acceptance and occurrence in learning although this differs in many ways from its traditional face-to-face counterpart, but the role and importance of discussion and critical thinking remain the same (Hall, 2015). Collaborative interaction among learners becomes possible when a group of learners work collaboratively on a specific topic or share ideas and materials to resolve any problem. The web -based learning environment affords Social interaction between learners and instructors occurs when instructors adopt strategies to promote interpersonal encouragement or social amalgamation. Synchronous communication features such as chatting and real-time conferencing tools allow learner in real-time interaction. Additionally, information and online resources from around the world can be accessed by anyone from anywhere as long as the person has a computer with an Internet connection. The structure of the online web course, class size, feedback and prior involvement with computer-mediated communication all influenced interaction in an online course (Jung et al., 2002). Although with the advances

in understanding of learning, educators now place greater emphasis on collaborative learning and the development of participatory learning communities to promote the social construction of knowledge. The constructivist view of learning focuses on the sociocultural context where knowledge is built (Richardson, 1997). It claims that learning takes place in a social environment, within which the cooperation of shared meaning through social interaction will result in cognitive dissention, it allows individual learners to restructure their own concepts (Schifter & Simon, 1992) many researchers have reported numerous benefits in online group learning, these are means easy to achieve learners will participate actively in online discussion. Collaborative interaction is a key component of a community of inquiry. Though, collaboration must comprise communication or discourse that is determined, threaded and thoughtful. Learner must be stimulated and motivated to consider the spirit of the quantifiable being presented and translate that into personal meaning that can be shared and collaboratively confirmed.(Garisson,2019). for students to participate in collaborative learning. Learning activities can be designed to support the creation of a learning community. These activities can vary from participation in discussion boards to participating in small group activities (Silvana 2013).

Many Research studies have discovered that, students who are shy to participate and collaborate in a classroom setting might change their participation behavior through online collaboration. Instead of remaining silent, they may be very active and engaged in online, as there is no time restriction or interruption for their online participation in class activities (Harasim, 1990). Interaction and student cognitive engagement during the online conversation are critical for creating new understanding and knowledge(zuhu,2006) Collaborative learning describes situations in which two or more subjects build synchronously and interactively a cooperative solution to some problem. The web -based learning contexts are designed to help in evolving critical thinking skills among the learners using different types of tasks and problem solving activities. These skills are extending the Zone of proximal development and cognitive abilities of an individual. The learner contracts in Zone Of Proximal Development by solving the problem by self, finding the solutions, searching appropriate learning tools in web context. It is a good tool for the learner in self -learning like web browsing, navigating different websites, online educational games, participating in online games, web quests, searching authentic content and also regulate themselves in positive learning in a web context. Such web consortium improves the learners' Zone of learning independently as equal to learn individually in web context and there will be ample opportunity to learn with More Knowledgeable Others(MKO) (Dange & Taj 2019).This discrepancy places prominence on the extent and quality of the conversations that occur within groups of students in collaborative environments.(Curtis & Michael, 2001). Collaborative interactions among students have been shown encouraging inspirations on students learning. Reciprocal teaching is a form of collaboration and there is evidence that in the discourse in which learners articulate and share their understandings, there is potential for sharing the cognitive load of the learning task. (Dillenbourg & Schneider, 1995). Discussion board is provided on the Blackboard learning platform for the online module of the course which allows students to participate in discussion and collaboration with fellow students and the course tutor. The objective of interactivity is to encourage participation in online discussion and foster the formation of a virtual learning community(Theresa et.al., 2007). Web base learning has different features associated with conventional learning circumstances especially with respect to the social communication situation, message exchange, cognitive load and involvement of the learners. To cope with possible problems resulting from these characteristics suitable instructional means have to be considered, like collaborative learning methods, on-line moderation, appropriate learning tasks or computer-based visualisation tools to motivate the learner's collaboration in web -based environments (Hron, & Friedrich,2003).

By reviewing many research studies about collaborative interaction in web-based learning environment it was found that there is need for developing a scale which measures the collaborative interaction in web -based learning. The procedure involved in the development of collaborative interaction scale is explained below.

Development of items

Initial pools of 25 test items were constructed. These items were examined by the researcher with the suggestion from the Research guide. Then, the test comprising the pool of items were given to experts to examine the items in terms of their validity, the uncertainty of the words used, length of the statement, item contingency, and appropriateness of the situations taken. Based on the suggestions, the items requiring modifications were rewritten by the researcher and added 5 more items, thus a total of 30 items were retained in the test for try out. The test containing 30 items was given to an English editor for editing and the distribution of items with respect to the dimensions is as follows.

Learning Aspects: There were 23 items in this component. It comprises the group discussions, interactivity and clarification of ideas among the other learners. Requirements made for learning through the web-based learning, social constructivism and the learning outcome, the relevance and appropriateness of opportunities made for learning through the web-based learning are considered in the items construction.

Technical Aspects: There were 07 items in this component and it includes the Zone of proximal development, reciprocal teaching among student and teachers to collaborate in learning and practicing four key skills like, summarizing, questioning, clarifying, and predicting and skills to check the level of collaboration among others in web-based learning.

Format and nature of items

Since the study is 'effectiveness of web-based learning course based on social constructivist theory' the collaboration of student teachers in web -based learning course had to be studied. The best way of doing this is to study the collaborative activities towards learning and technical aspects of the web-based learning course. So, the researcher decided to present those statements in the form of items consisting a test to which student-teachers would respond. While choosing the statements for item construction, student-teacher's own environment was taken into consideration as they are more sensitive to take an interest in the statements which concern them. Therefore, student-teacher's own experiences in collaborative interaction in web bases learning was taken into consideration and on which items were constructed.

Response pattern

The items were provided with five (5) possible alternative responses from which student-teacher is required to select one response. These responses are based on five point Likert scale and it represents the opinion of student-teacher the response are strongly disagree, disagree, undecided, agree and strongly agree. Each item consists of the statements that student-teacher did not face any uncertainty in understanding the item and got biased to a particular response. Therefore, while student-teachers' opinion about collaborative interaction in web-based learning his/her response on all the components had to be taken into account. While responding to the test items, the respondents had to read the statement properly, think and give their opinion about the particular statement given. Then he/she had to put a tick(✓) mark against the alternative to which he/she had to choose the responses towards the statement. This involved a mental presented, distinguishing between the alternative and choosing the reaction.

Scoring procedure

It has already been pointed out previously that the five responses represented (strongly disagree, disagree, undecided, agree and strongly agree). These five alternatives were assigned weightage of 1,2,3,4 and 5 respectively as these alternatives appeared in each item.

With the above guidelines evolved for scoring, the responses were scored and the total score of each respondent would check.

Establishing Validity

The statements on the scale are all related to the area of study and each statement independently focuses on what it claims to measure. This confirms the face validity of the scale. Content validity of 'collaborative interaction scale through web-based learning' was established by the suggestions of 10 experts, which included research guide, educational psychology experts, web developers and senior teacher educators. The experts agreed that the statements in 'collaborative interaction scale' are relevant and worthwhile for collecting the data and by considering the suggestions for the experts, some of the items and responses were modified and rewritten. The experts were satisfied with the relevance of the test items and the scoring procedures. Thus implies that the content validity of the tool was established. This suggests that the 'collaborative interaction scale through web-based learning' is comprehensive and relevant.

Establishing reliability

Try out of the tool: To make a selection from the pool of 39 items, try-out was done. This needed student teachers of B.Ed. Programme. Therefore, Alva's College of Education, Moodbidri, Dakshina kannada, Karnataka, was selected for try-out purpose. The researcher ensured that the try out sample and experimental sample were equal in relation to medium of instruction, age, setting of the college, etc. both the colleges representing try out sample and experimental sample follow 'English' as the medium of instruction and are affiliated to the Mangalore University. The age level of the student-teachers in both the situation was almost the same. The sample for the try out consists of 30 student-teachers of B.Ed. Programme. During the try-out, student-teachers were given orientation about the purpose of the test. Student-teachers were allowed to take their time own time to respond to the items.

Cronbach's alpha method: Cronbach's alpha is the most common measure of internal consistency (reliability). It is the most commonly used when multiple Likert type of questions in a survey/questionnaire that form a scale and to determine if the scale is reliable. The Reliability test of 'collaborative interaction scale' was found to be for the entire 30 items by the use of Cronbach's alpha reliability formula.

Table 1.Item wise analysis of collaborative interaction

Sl No	Items	Item tool correlati on	Remark
1.	There was an opportunity for the discussion	0.895	Accepted
2.	The discussion activities were well organized	0.905	Accepted
3.	The suggestions from peer learner helped me to solve the problems in learning.	0.903	Accepted
4.	The discussion activities in learning increased my understanding	0.893	Accepted
5.	experts in group Discussion have done differently to make better understanding	0.896	Accepted
6.	Group discussion supports opinions with evidence from the other peer discussion	0.903	Accepted
7.	My Ideas were expressed clearly and concisely to others	0.895	Accepted
8.	It helps me to construct creative, challenging and engaging discussion	0.897	Accepted

9.	The course included a way to exchange ideas with other students.	0.898	Accepted
10.	Instructions were clear and help was available	0.892	Accepted
11.	The amount of time given for learning is much sufficient	0.895	Accepted
12.	The pace of content in the web learning course was advanced.	0.905	Accepted
13.	The instructor was responsive when contacted to clear doubts	0.807	Accepted
14.	I felt encouraged to contact instructor	0.814	Accepted
15.	The instructor provided opportunities for me to interact with him or her in this course	0.846	Accepted
16.	The instructional methods used in this course facilitated my learning.	0.843	Accepted
17.	I felt happy to discuss and interact with other members through online.	0.816	Accepted
18.	The course improved my problem-solving skills	0.810	Accepted
19.	The availability of the instructor via email or online discussion was very useful	0.895	Accepted
20.	I feel that opportunity to interact with other virtual students in class discussion was very interesting.	0.905	Accepted
21.	Interactive quiz session was very helpful in supplementary learning.	0.903	Accepted
22.	This web-learning course has opportunities for interactive activities	0.893	Accepted
23.	Feedback was provided by the experts within the stated timeframe	0.896	Accepted
24.	Clarifying of Ideas encourages me to take more responsibility for learning.	0.903	Accepted
25.	I enjoyed working with group.	0.895	Accepted
26.	I feel frank and honest in my own performance and sharing of that with other peers.	0.897	Accepted
27.	I asked questions when I needed help in learning.	0.835	Accepted
28.	It supports me to summarize the content	0.847	Accepted
29.	Asking questions with group member was very helpful	0.895	Accepted
30.	Web learning course was very supportive in summarizing the content by taking suggestions from other group	0.872	Accepted

	members.		
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Selection of Items: Cronbach's Alpha was used to assess the degree of internal consistency among all set of items and then the task value was calculated. As a result of the item analysis carried out for item selection, a total number of 30 items were selected for the final form of the test. There were 23 items under the dimension 'Learning aspects' and 07 items under the dimension 'Technical aspects'. The Cronbach's alpha reliability score for the total items in 'Collaborative Interaction scale' was 0.90.

Conclusion: The validate scale to measure collaborative interaction in web-based learning can be used to find out the application of collaboration among B.Ed. student-teachers and to analyse various factors associated, so that necessary steps can be taken to enhance the collaborative interaction in web-based learning among student-teachers in their learning process.

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