Social networking website-based learning activities to promote critical thinking- Pilot Study

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Abstract
The project was an educational intervention study in which I designed learning activities based on the resources available through social networking (SN) websites, and investigated how these activities affected students’ critical thinking (CT) skills, as reflected in their argumentative writing. The objective was to demonstrate an improvement in CT skills through this intervention and provide design guidance for SN website-based learning activities. This study was conducted with 11 female undergraduate students from the Instructional Technology Department (ITD) at King Saud University (KSU) in Saudi Arabia, who were studying the 241ITE course. I used a design-based research (DBR) methodology combined with the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model of learning design to develop the intervention and analyse the results. I structured the study into two main stages: intervention design and intervention implementation. The study's findings showed that many of the students had significant problems in acquiring CT skills, and that the learning activities helped most students overcome them. Students also registered positive attitudes towards such interventions. The findings may influence educational practices in Saudi universities and stimulate interest and investment in SN website use in education.

Keywords: Social networking websites; Critical thinking; Learning activities
Introduction

Since it is not realistic or even desirable to have students limit their social networking (SN) website use, students need to learn to evaluate everything they receive and share through such sites. In other words, they need to know how to think critically about every resource they use.

Critical thinking (CT) is “the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action” (Scriven & Paul, 1987, p.1)

A social networking (SN) website is defined as a linked collection of web pages that allows members to communicate with one another and build social networks throughout the world by sharing information and interests through blogs, pictures and videos (Malesky & Peters, 2012).

Smith et al. (2009) state that the vast majority of university students have profiles on at least one SN website such as Facebook and Twitter. Crook and Harrison (2008) claim that integrating SN websites into education offers benefits, including improvements in student participation, social relationships, communication and facilitation of learning.

Although SN websites offer many benefits, educators need to be aware of the potential risks SN websites pose for students. The internet generally makes knowledge and information freely available, often without limitation, but without any guarantee of the information’s accuracy and validity. This makes critical thinking a key skill necessary for using SN websites. CT skills help students evaluate the information and resources they obtain from SN websites,
and allow them to make decisions about whether or not to accept the information. The goal is for students to acquire knowledge and exercise reasoned judgment. With CT skills, students are able to examine logical relationships among statements of data, construct arguments, respect diverse perspectives, view phenomena from different points of view, and have the flexibility to recast their thinking when reason leads them to do so (Macknight, 2000, p.38).

The purpose of this research is to promote students’ CT skills, as reflected in their writing, by using SN website-based learning activities created through the use of different SN websites’ resources such as YouTube clips, Twitter tweets, Facebook pages, Wikipedia content and blogs. The aim of these learning activities is to teach students how to evaluate different points of views and express their own opinions through argumentative writing.

Students will use and evaluate different SN resources throughout the learning activities that will be used to develop and inform the present research. This will enable the following research question to be posed: What is the effect of SN website-based learning activities on student participation in constructive activities and the development of CT skills? This question is divided into the following three sub-questions:

**Question 1:** Do SN website-based learning activities promote students’ CT skills?

**Question 2:** What are students’ attitudes towards, and awareness of, CT skills and SN website-based learning activities?

**Question 3:** What are the factors that promote students’ participation in the learning activities?
To answer these questions, I will first provide a brief overview of the intervention used in this research in Section 2. This is followed by section 2.1 that seeks to identify the probable causes of performance gap, through an analysis of the course (2.1.1), lecturer interviews (2.1.2), and a discussion of the findings (2.1.3). Section 2.2 considers the design of the intervention, which includes the learning activities (2.2.1), CT Rubric (2.2.2), and student questionnaire (2.2.3). From there, section 2.3 considers the development of the intervention as the ‘design on paper’ is transferred to a real context. Section 2.4 discusses the implementation of the designed intervention in a real situation. In section 2.5, I evaluate the intervention to determine whether the research questions were answered in the following sections: ‘Improvement in CT skills’ (2.5.1); ‘Student attitudes and awareness’ (2.5.2); and ‘Factors that affect students' participation in the learning activities’ (2.5.3).

Finally, section 3 discusses the research findings and conclusion.

The intervention
I designed the intervention (learning activities) and analysed the results by using the five-stage ADDIE (Analysis, Design, Development, Implementation, and Evaluation) learning design model. Figure 1 illustrates the stages of designing and implementing the intervention, and the following sections discuss these stages in more detail:
Analysis
According to Peterson (2003), the aim of the analysis step is to identify the probable causes of a performance gap. In the current study, this step had three key considerations:

- To ensure enough data was gathered and to ascertain whether students experienced any serious problems in learning and achieving goals.
- To discover anything of significance that might help in designing and building the research’s learning activities.
- To define the CT criteria and the best implementation process.

Course Analysis
It is important for the activity designer to have a complete understanding of the situation in which the activities would be used, namely the module objectives, syllabus, course achievement requirements, and any other conditions used in completing course 241 ITE (Learning Technology and Communication).
I built the activities based on the 241 ITE (Learning Technology and Communication) course syllabus, which is taught to undergraduate students from the School of Education at King Saud University. I familiarised myself with the course specifications from the Instructional Technology Department (ITD) at the university, the lecturers’ course syllabus, and students’ past achievements and productions. Using this information, I developed a broad view of the course’s aims, syllabus and activities.

**Lecturer interviews**
Current lecturers of the course were an important source of data. I conducted semi-structured interviews with six of the lecturers to gather information that might help me build and implement the research activities. I was particularly interested in determining which CT skills students lacked in the lecturers' opinion and which needed to be learned and practised. Additionally, to gain an overview of the learning activities, I investigated the lecturers’ use of such activities in teaching, and the relationship between SN websites and learning from the lecturers’ points of view.

**Discussion of the analysis findings**
The course analysis and interview findings indicated a movement towards improving education by organizing the teaching process and upgrading the learning aims in the Instructional Technology Department (ITD) at KSU. For example, the department and the lecturers are committed to supplying students with a course plan that clearly outlines the course syllabus, projects and their related requirements. Students have a scheduled plan for all course projects and activities. Moreover, these projects and activities, such as creating an oral presentation or designing instructional software, are the same for all students in a particular course to ensure consistency amongst the various sections.
The lecturers are aware of the importance of improving students’ higher-level thinking skills, and try to promote these skills through various activities. Lecturers concentrate on the higher levels of learning skills in Bloom's taxonomy, such as analysis, synthesis and evaluation. Moreover, the lecturers claim that they are trying to promote students’ CT skills by encouraging them to undertake constructive activities, which require higher-level thinking skills, such as analyses and synthesis, rather than just rote memorization. However, during the interviews, I noticed that lecturers had some misunderstandings about concepts and definitions of higher-level thinking and CT skills, as some lecturers considered them to be the same. As a result, I worked with the lecturers to explain that higher-level thinking is an umbrella term that encompasses some sub skills such as analysis, evaluation, synthesis problem solving and CT.

This finding is consistent with that of Paul and Elder (2005), who found that a significant majority (89%) of United States university lecturers claimed that the promotion of CT skills was a main objective of their universities, yet only 19% could define CT and 77% had little or no idea what CT skills should be included in the course content. Fuiks and Clark (2002) stress that teachers often confuse CT skills with other types of higher-level thinking skills, such as problem-solving, scientific reasoning, informal logic or creative thinking. Additionally, students should be aware of which CT skills they will learn and practise. These findings validate the importance of clarifying which specific CT skills were analysed in this research. In this study, I define CT skills as an individual thought process that begins with the intent to answer a question through an evaluation of different points of view and ends with expressing a personal opinion clearly.
ITD’s lecturers engage students in different types of activities; for example, designing and building projects, evaluating other students’ projects, and giving oral presentations. However, students, especially undergraduate learners, have not had much experience using CT skills to write essays. This omission might explain why "students have a weakness in writing skills and with expressing their opinions" (Lecturer interviews). Moreover, lecturers claim that students are weak in some CT skills and need more support. These skills include building arguments, making judgments supported by evidence, and considering other points of views. One of the lecturers stated that "the traditional ways of teaching will not help to improve these skills" (Lecturer interviews).

Students’ thinking can be reflected in their writing style (Bean, 2011). Teaching students better writing skills may be a good way to teach them how to think critically and how to express their thinking through writing. Furthermore, since student writing is a positive and criteria-driven way of assessing their CT skills, I chose, for this study, to assess students’ CT skills through their argumentative writing (as shown later in 2.2.2).

The ITD’s lecturers have used SN websites during the 241 ITE course for a variety of reasons. Most of them have used these websites as a tool for communicating with students, and others have used blogs to engage students in module discussions. As a result, students and lecturers have had previous experience using SN websites. However, because SN websites are not widely used as a resource for, or as a foundation of, learning activities, this study fills the gap in this area and examines others’ use of SN websites.

Lecturers claim that SN websites offer many opportunities that might help improve students’ thinking skills. Using SN websites, such as YouTube, in an innovative way to
obtain more information about topics and critically evaluate ideas might be a good way to help students become better thinkers. Furthermore, using blogs as a platform to discuss issues and obtain feedback may help students express their opinions and accept the opinions of others. In this study, SN websites are used as resources for study, a platform to exchange opinions and a space to practise CT skills. Moreover, a class blog was used to help students learn how to post essays and share feedback.

**Design**

During this stage, I tried to determine the learning objectives, then design the learning strategies, learning activities, assessments, and methods to best organize and present the content on the basis of the learning objectives (Wang and Hsn, 2009). The analysis phase provided the information needed to design the intervention.

**Designing the learning activities**

I used the 241 ITE course syllabus (lessons) to design the activities, and different SN website resources, such as YouTube, blogs, Twitter and Facebook to support the main topic of each lesson. I selected resources from these websites to motivate students to think critically about issues that related to the lesson topic. I designed three activities entitled:

- ‘Communication skills’.
- ‘Instructional technology’.
- ‘Using Internet websites for learning purposes’.

The design included open-ended questions and a set of related SN website resources, which students had to answer by thinking critically about these websites’ content, as reflected in their argumentative essays.
I decided to base the activities on the WebQuest model, which is an inquiry-based learning format that uses different Internet resources. According to Dodge (2001, p. 1) it is an “inquiry-oriented activity in which most or all of the information used by learners is drawn from the Web”. The model usually provides structure and guidance for both students and for teachers, through six main components: Introduction, Task, Resources, Process, Evaluation, and Conclusion (Kelly, 2000).

I decided to base the activities on the WebQuest model for the following reasons: first, it helps guide students to specific resources that have been chosen by the teacher. Second, it focuses on using information rather than merely looking for it. Third, it supports students' analysis, synthesis, and evaluation of information. All of these skills require in-depth learning that involves creating new knowledge through a CT process (Dodge, 2001). In addition, I found it the most suitable model as it supports my intervention’s aims and purposes.

All the activities were posted on the class blog and students were asked to access the activity, answer the question and post their answer (essay) on the blog.

**Designing the CT rubric**

I decided to evaluate the improvement in students’ CT skills, as reflected in their argumentative writing, using a designed CT rubric. Based on the literature (Facione & Facione, 1994; Andrade, 2000), the students’ needs and the research’s aims and context, I adopted the following seven CT criteria to assess students’ argumentative texts, as presented in the CT rubric:
1- **Setting out the claim.** Make a claim and explain why it is controversial.

2- **Analysis.** Thoughtfully analyse and evaluate alternative points of view.

3- **Interpretation.** Justify key results and procedures, explain assumptions and reasons.

4- **Reasoning.** Illustrate clear and accurate reasons in support of the claim.

5- **Inference.** Provide different points of view from the available sources with proper documentation.

6- **Structure.** Use words and phrases that support an argumentative writing style, such as ‘on the other hand’, ‘the opposing view is’ and ‘in my opinion’.

7- **Organisation.** Organise an argumentative essay that consists of the following parts: introduction, first claim with supporting evidence, second claim with supporting evidence, personal opinion backed by evidence and a conclusion.

The rubric consisted of a three-point scale: strong (1), acceptable (0.5), and unacceptable (0). Students were given a specific description of what each grade on the scale meant.

The CT rubric was applied three times during the intervention, once after each activity submission. I looked for changes in each student’s thinking, as reflected in their writing, to determine whether their CT skills developed over the series of the three writing activities. Figure 2 illustrates an example of the analysis applied to student writing before transferring to the CT rubric.
Designing the student questionnaires
In this study, closed-ended questions were chosen for the questionnaires because specific answers were required. The questionnaire had three purposes: 1- to explore students' attitudes; 2- to gather information about their feelings regarding any changes in their skills; and 3- to gain a better understanding of the factors that affect students' participation in the course activities.

Based on this research’s aims and context, and different literature in the field of learning activities (Paul and Elder, 2005; Minocha, 2009; Alwehaibi, 2012), I designed the questionnaire. The questionnaire was distributed to the students who participated in the study at the end of the semester, after they had finished all of their activities. Out of the original group of 14, 12 students completed the questionnaire successfully and 11 of those students completed the study. The data were analysed using SPSS and were interpreted to answer the research questions.
**Development**

In this step, the ‘design on paper’ was transferred to a real context. The learning activities were developed using the Quest Garden website (questgarden.com) to implement a WebQuest model design. Building on the course syllabus, I developed three activities based on different SN websites/resources such as YouTube, Twitter and blogs. Moreover, I used Google’s services to establish the class's blog and set it up for public use, which helped the students access the blog without special registration.

Students had to prepare their essays by following the activities' processes and the instructions given to them on WebQuest. They were assessed against a CT rubric, which was also posted on WebQuest. Figures 3 and 4 show (in Arabic) a typical activity introduction and activity process.

![Figure 3: Introduction page](image-url)
The evaluation of the intervention development

The initial design of the learning activities, the CT rubric and the questionnaire were evaluated in several ways:

- During the lecturer interviews, I presented the initial design to them and noted their feedback on the design.

- The design of the learning activities was shown to several professors who specialised in learning design, curriculum and teaching methods; and I used their suggestions to improve the design.

- There were continuous improvements to the design of the activities and implementation process after each activity, based on my observation of the implementation process and feedback received from the students. For example, some students misunderstood some criteria in the rubric which required more clarification in the next activity implementation.

Implementation

During this stage, the designed intervention was evaluated by implementing it in a real situation. This helped me, as a researcher, apply my theory with practitioners (i.e., students)
in real situations (in the classroom), gain feedback from the experience, modify the intervention, and try it again (Avison et al., 1999).

This study was conducted from September 2013 to December 2013, for one semester. The sample for this study was selected randomly from the original population, which were all the female undergraduate students in the School of Education enrolled in the 241 ITE course in the first semester of 2013. I conducted this study with 14 students in the course. Of the 14 students, one dropped out of the course after three weeks, and two did not complete all three of the activities, leaving 11 students who completed the study successfully.

The learning activities were distributed throughout the course syllabus: one activity for each main topic. Students had two weeks to post their answers on the class's blog. One week was allowed for reading, understanding, and answer preparation. The second week was allocated to writing the answer, posting it on the blog, checking the other students’ answers and commenting on them.

Students were given instructions, assessment criteria and the CT rubric. All of these were illustrated in the WebQuest design. Students were asked to follow the instructions and answer the question that was given to them by writing an argumentative essay.

After the students posted their essays on the blog, they were given brief individual feedback on the blog and they were provided with more detailed individual feedback on their writing, based on the CT criteria.
Evaluation
In order to evaluate the intervention and answer the research questions, data gathered from the application of the CT rubric and students' questionnaire, discussed earlier in sections 2.2.2 and 2.2.3, were used. Furthermore, additional information was gathered from my observations, as the instructor of the course, that helped to interpret the findings.

Improvement in CT skills
Eleven students out of the 14 completed the three activities successfully. Two of the students completed some of the activities but not all three, so their answers were excluded.

At the end of the semester, each student received a result for each of the three essays (Table 1) they completed. Each essay was marked out of seven points, based on the CT rubric.

<table>
<thead>
<tr>
<th></th>
<th>First activity</th>
<th>Second activity</th>
<th>Third activity</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stu 1</td>
<td>5</td>
<td>5.5</td>
<td>5.5</td>
<td>Increase</td>
</tr>
<tr>
<td>Stu 2</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>Stable</td>
</tr>
<tr>
<td>Stu 3</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>Stable</td>
</tr>
<tr>
<td>Stu 4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>Increase</td>
</tr>
<tr>
<td>Stu 5</td>
<td>4.5</td>
<td>3.5</td>
<td>6</td>
<td>Increase</td>
</tr>
<tr>
<td>Stu 6</td>
<td>5</td>
<td>6</td>
<td>5.5</td>
<td>Increase</td>
</tr>
<tr>
<td>Stu 7</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>Increase</td>
</tr>
<tr>
<td>Stu 8</td>
<td>3</td>
<td>2.5</td>
<td>4</td>
<td>Increase</td>
</tr>
<tr>
<td>Stu 9</td>
<td>4.5</td>
<td>6</td>
<td>1.5</td>
<td>Decrease</td>
</tr>
<tr>
<td>Stu 10</td>
<td>6</td>
<td>6.5</td>
<td>7</td>
<td>Increase</td>
</tr>
<tr>
<td>Stu 11</td>
<td>5</td>
<td>6</td>
<td>6.5</td>
<td>Increase</td>
</tr>
</tbody>
</table>

The previous table (1) shows that eight (73%) students improved their total mark on the CT rubric between the first and the third activity. For two (18%) students there was no difference while one showed a decline. This data suggested that the intervention, in general, had a positive effect on most students’ CT skills.
Specifically, the correction of students’ writing shows that there was improvement in the students’ ability to express their points of view, present different claims, and use an argumentative writing structure; however, students still need more practice in supporting their opinions with evidence and providing stronger arguments, as well as evaluating and commenting on other claims. This is supported by Kuhan's (1991) argument that CT skills are not easy and challengeable; therefore, students will not get better without lots of practice.

**Student attitudes and awareness**

In their questionnaire responses, five (42%) of the students described the activities as difficult to do. Based on the students’ reflections and feedback, this may have been due to the fact that this was the first time they had attempted these kinds of activities, and it required a mix of CT skills, writing skills and self-directed use of web resources, which they were unfamiliar with.

Moreover, after participating in the learning activity, eleven out of the twelve (91%) students noticed that their attitude towards CT skills had changed; seven (58.3%) stated that their attitude towards writing had changed significantly, and the other five (42%) stated that there had been some change in their attitude towards writing. Furthermore, ten (83%) students believed that their writing skills had improved dramatically. These findings confirm that there were some positive changes in the students’ attitudes toward writing skills and CT, and that it might be useful to apply these activities to a larger sample of students.
The students thought SN websites were a useful resource to improve and work on their CT skills. For example, SN websites helped them have discussions with people who held different points of view, provided a good space to critique others, helped them raise and discuss social issues, and enabled personal opinions to be presented without limits or restrictions. Moreover, students stated that SN websites helped them increase their language vocabulary and develop their writing skills. This is supported by a substantial amount of research (Bryant, 2006; Bosch, 2009; Yang, 2009; Charlisle, 2010 and Buus, 2012) documenting many benefits of using SN websites for learning purposes, though more research is required to prove the efficiency of using SN websites on promoting CT skills (Minocha, 2009).

The students’ awareness about CT skills was based on the CT criteria used in the research. Students were asked about some of these CT skills, whether they practised them in their life, whether they obtained them from this research activity or knew them before this intervention. Tables 2 and 3 illustrate these skills and the students’ awareness about them.

Table 2: Students’ awareness of CT skills (n=12)

<table>
<thead>
<tr>
<th>CT skills reflected in argumentative writing</th>
<th>Yes</th>
<th>No</th>
<th>Sometimes</th>
<th>I do not know the importance of this skill in writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>I do not deviate from the main purpose of my writing</td>
<td>5</td>
<td>0</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>I write in a style that fits in with the target audience (reader)</td>
<td>8</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>I use keywords that make ideas clear for the reader</td>
<td>66.7%</td>
<td>8.3%</td>
<td>25%</td>
<td>0%</td>
</tr>
<tr>
<td>I organise the written text in the argumentative style</td>
<td>58.3%</td>
<td>16.7%</td>
<td>25%</td>
<td>0%</td>
</tr>
<tr>
<td>I support the argument with evidence</td>
<td>58.3%</td>
<td>16.7%</td>
<td>16.7%</td>
<td>0%</td>
</tr>
<tr>
<td>I take notes from the resources and references before I start writing</td>
<td>58.3%</td>
<td>8.3%</td>
<td>33.3%</td>
<td>0%</td>
</tr>
<tr>
<td>I write many drafts and revise them before the final draft</td>
<td>75%</td>
<td>8.3%</td>
<td>16.7%</td>
<td>0%</td>
</tr>
<tr>
<td>I add my own voice to the ideas</td>
<td>66.7%</td>
<td>8.3%</td>
<td>25%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Factors that affect students participation in the learning activities

Data collected, initially from the design stage of this research and later from the students' questionnaires, indicated that several factors affected the activity design and implementation and, in turn, promoted students' participation. For example, the students described the current design of the activities (using the WebQuest model) as creative and attractive. Additionally, they stated that the instructions given through the WebQuest-type design were clear and easy to follow. This suggests that the WebQuest design may be a good platform to provide learning activities for students.

In addition, students were asked to score, from 1 (most important) to 6 (least important), the factors they thought were important for the activity design and implementation: the lectures, the activities themselves, the evaluation model, teacher feedback, the posting of answers on the class blog, and the comments from other students on the blog. Based on students' responses, the factors were sorted from most to least important:
1- The activities themselves.
2- Evaluation model (rubric).
3- Posting the answers on the blog.
4- Lectures.
5- Comments from other students.
6- Teacher feedback.

This provides some pointers as to future learning activity design and implementation. Students ranked the learning activities as the most important factor as it encouraged them to think critically, while lectures about CT skills were ranked as least important. Students were able to practice CT skills without direct instruction from the teacher in the class. This meant they were able to work independently using Internet resources to practice and improve their CT skills.

In addition, data analysis shows that giving students specific assessment criteria (in the evaluation model or rubric) is also very important. This indicates that any activity design should provide students with specific assessment criteria that they can use to guide and critique themselves. This is supported by Andrade’s (2000) statement regarding the importance of using a rubric to assess students. Moreover, there are some important issues in the designing of learning activities: students need full instructions regarding the achievement requirements; they need models or patterns to follow, and enough time to do it. Additionally, such activities need adequate preparation and monitoring of the students’ performance.
Conclusion

This study investigates whether merging SN websites with learning activities helps improve CT skills, improves students’ participation in constructive homework, and provides design guidance for SN website-based learning activities.

While the use of SN websites is increasing, this research reveals that many Saudi students in higher education lack the CT skills needed to make sense of the massive wave of information reaching them through these websites. As a result, this research highlights that students need SN website-based learning activities and that these activities can help students improve their CT skills.

This research contributes to knowledge in the field of critical thinking through the design, development and evaluation of SN website-based learning activities to promote students’ CT skills, as well as by exploring other affordances provided by using SN websites in the learning field. Additionally, this research fills a gap in knowledge that exists with regard to the influence SN website-based learning activities have on developing CT skills in students in Saudi Arabia, and may influence educational practices in Saudi universities.
References


