Creativity in the Online Classroom: Findings from a Five Year Randomized Control Trial

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Abstract: Communication and engagement is vital to creativity, yet how do differing communication methods influence creativity? This research summarizes a five year study, involving over five hundred participants from a range of different locations, cultures and ability levels. Comparing online digital communities and the more common face-to-face communities, this project studied how participants engaged in learning, interactions and the development of creative outcomes. Overall the online communities were highly successful in transfer of information, in fact more effective than face-to-face. Despite this, the participants in online communities indicated a sense of detachment and a lack of true community. This demonstrated a key weakness of online communities, yet this sense of detachment also led to a significant amount of risk taking in creative projects. The relative anonymity of online communities led to bolder creative risks being taken and broadly better outcomes being achieved. The research also identified areas where online communities showed the ability to be more inclusive. Members of groups usually distanced by issues such as language, culture and disability found online communities more accessible and this was demonstrated in their improved creative outcomes. These findings highlight some of the less obvious, yet valuable strengths that online creative communities can contribute.

Introduction

Creative communities often contain a group of dynamic and varied individuals. These communities are often driven and thrive on challenging accepted approaches. Given the nature of the participants of creative communities, this research sought to identify whether new forms of communication and interaction would be effective in engaging the creative participants, and whether these new forms of interaction would be effective (in terms of satisfaction and outcomes) when compared against the more common forms of interaction. Previous studies have identified the effectiveness of online communication technologies in mainstream learning/educational environments (Newhouse et al 2007 & Means et al 2009), however little of this research deals with creative activities and learning. The use of online communication tools in education has been expanding significantly and this is clearly demonstrated by the many examples of online educational resources (yet the creative fields are poorly represented). Studies by the US Department of Education estimated that in 2004/2005 more than 37% of school districts had technology supported education courses. By 2005/2006 estimates rose to more than 700,000 students engaged in online learning, two years later in 2007/2008 this number had risen to over one million (Picciano & Seaman 2007). This represented a 43% increase and demonstrates the rapid growth of technology driven online education (Means et al 2009). This project sought to apply online learning in the field of creative communities and through that process to identify the strengths and weaknesses of online communication as applied to creative activities.

Comparing Creative Communities

Creative communities come in a variety of shapes and styles and although they can be very diverse in nature they all seek to use engagement to enhance communication, creative learning and outcomes. This research contrasts two quite different types of creative communities, online versus face-to-face. The first groups/communities were face-to-face communities where participants engaged in creative challenges and
shared those experiences in a common physical location (where they could communicate in a face-to-face manner with other members of the community). The second communities/groups were online and engaged in the same creative tasks but were only able to communicate through a suite of online communication technologies (note participants came from varied locations). Each community/group engaged in a set of creative activities and interactions, the outcomes of these activities were recorded and analysed to identify the similarities, differences, strengths and weaknesses of each community in terms of creative engagement and creative outcomes.

**Face-to-Face Communities**
The communities described as ‘face-to-face’ involved creative resources (examples, tutorials) provided online to all students. Meetings/Classes were scheduled and ran in appropriate spaces with a member of the teaching staff in attendance delivering the creative content and leading participants through projects. That lecturer walked through the materials with the students in a face-to-face interactive scenario. This was very much a standard tertiary classroom scenario. Although online lecture notes and tutorial resources were provided this method was referred to as ‘face-to-face’ for the purpose of clarification.

**Fully Online Communities**
The fully online materials were designed to function such that any participant could complete the full course without ever needing to attend any physical face-to-face classes. These resources involved all course content being provided online with all communication (lectures, tutorials, resources and discussion) delivered in the form of online videos and interactive chat sessions, tutorials as interactive online web pages and/or online video and chat times/rooms available on a weekly basis for discussion. Assessment in the form of examinations and project work was carried out online using video conferencing for presentations.

**Mixed (Online with Addition of Limited Meetings)**
Mixed (Online and limited Face-to-Face) delivery was added to the research trial one year into the project, following the initial discovery that online methods had lower student satisfaction levels. These resources/methods involved all of the resources listed in the online scenario but with more personalized lectures (ie. lectures not simply a recording of a lecture to a large room of students but in the form of a one on one discussion) and a small number of face-to-face meetings (three per semester) for discussion of materials and projects.

**Comparative Testing**
The purpose of this project was to compare and measure the strengths and weaknesses of differing styles of interaction for creative activities and learning materials. Testing each method took place over a five year period from January 2005 through to January 2010. To ensure consistency in testing, all comparisons were made between participants engaged in learning/undertaking, the same activities/content, over the same time period with consistent assessment of outcomes and participant feedback applied to each group. The only difference between each group was the method of delivery/interaction (ie. some face-to-face others online). The activities and materials being undertaken were tertiary level undergraduate creative courses. Each course was delivered to class groups ranging in size from twenty participants up to a maximum of thirty five participants. The course materials were delivered in the English language (note that this was the first language for most students but not all).

The full experimental trial included five hundred and nineteen participants. These participants ranged in age from seventeen years up to fifty six years of age (with an average age of twenty two years). They came from varied cultural backgrounds including participants from all major continents and more than fifteen countries. For the online groups, participants undertook the course from both nearby locations as well as significant distances away (majority from south east Queensland (<100kms) but many from other areas of Australia and several overseas including Jinan (China), Thailand, Norway, London (UK) and Kuala Lumpur (Malaysia)).

Each participant was randomly allocated a style of delivery (either online or face-to-face). For these trials neither the participants nor the assessors were aware of the trials purpose or into which group they were being allocated (thus the trial was a double blind, randomized control trial). Each participant then undertook the fourteen week course/project using the method as appropriate for their group. Interacting with fellow participants and course materials, submitting appropriate assessment items as required. The topic/course content and assessment were consistent for all participants, thus keeping only the
delivery method as the altered factor. During the fourteen weeks they were also surveyed to gain insight into their feedback on how satisfied and engaged they were with the course and its delivery method. The final data element that was collected looked at how the students engaged with the online resources by recording the methods and times at which they accessed the resources, providing information on which resources were more or less effective and how important the assessment items were in driving use of the resources and creativity. At the conclusion of the course an assessment was made of the students learning and creative outcomes in the form of examinations and project based work outcomes. These assessments were used to measure the effectiveness of the teaching method in terms of learning outcomes. Participant feedback was also collected as a means to measure participant satisfaction and engagement. From this data comparisons between the methods of interaction/community engagement were developed.

Results

Overall the results of the five year, 519 participant randomized control study indicated that there were not statistically significant differences, in terms of learning outcomes in a broader sense, between face-to-face and online, but there were some special situations where one was more successful than the other, as outlined below.

Interaction Patterns
Face-to-face communities showed high levels of group attendance and engagement early in projects (>90% attendance at meetings in first three weeks, however these numbers dropped significantly after that with little engagement outside of specific group meetings) and this engagement diminished as the project progressed. Online groups did not show single periods when all attended, in fact the attendance was quite mixed (some interacted significantly early in project, others later, interestingly many participants followed pattern based behaviours (eg. regularly returning to the work at the same time each week)). Online participants tended to engage for a smaller number of longer periods than the face-to-face participants. The mixed groups showed excellent group (face-to-face meeting) attendance and also higher online engagement than online groups. This method had the highest actual engagement with resources as well as higher satisfaction levels.

Engagement
The online groups showed lower levels of engagement and community satisfaction (although they were learning and interacting they didn’t feel as engaged), see Fig 1.

Figure 1: Participant satisfaction with engagement (Online vs Face-to-Face)
Given that the participant feedback was for the same creative project/material and assessment with the same member of teaching staff. This highlights the fact that students in the online groups found the online community less engaging and as a result were less satisfied than their face-to-face counterparts. These early findings led to the project adding the ‘mixed’ style of delivery to the trial. This mixed style added in a limited number of optional face-to-face sessions (in addition to all of the resources offered in the online version). Over the three years these optional sessions were attended by on average 62% of students and led to improvements in feedback (although improved, feedback still had online much lower than face-to-face).

Outcomes
In terms of creative outcomes, the results from the trial demonstrated that online groups were as effective as face-to-face in terms of direct knowledge transfer and creative outcomes as measured by examination and project outcomes (see Fig. 2). Interestingly online delivery achieved a slightly higher average outcome with the mean of online group results coming in at 71.4% as compared to face-to-face groups achieving an average of 64.7%. Although subtle this result matches similar findings from other online studies (Means et al 2009, Cavus & Ibrahim 2007 & DeBord et al 2004). The sub elements of these overall results, the examination and project, were both relatively close in value. The examination results proved to be extremely close for both groups (72.5 % and 74%) it was the project work that made the bulk of the difference. These results in essence reflected the nature of the project based work created by the online students. Observation of these project outcomes demonstrated the fact that participants in the online groups tended to take more risks with their projects (and the variety of outcomes from these groups was broader). The online participants had been more willing to use higher end tools and approaches than their face-to-face colleagues.

![Online vs Face-to-Face Results](image)

Figure 2: Overall Online vs Face-to-Face Results

The other notable result involved students who are normally more excluded in face-to-face creative environments. Those being participants for whom the class is in their second language, and those with cultural or physical issues that have a limiting impact on their ability to engage in a face-to-face scenario. Although these participants (who are referred to as disadvantaged participants below) represented only a small portion of the overall group (23 out of 519), their results demonstrated that online methods are more effective for particular groups (see Fig. 3).
In this particular trial there were a total of five students with physical disabilities that limited their ability to engage in the classical face-to-face scenario. There were also eighteen international students for whom English was not their first language (and who had previously had significant difficulties in their studies). Over a five year period this trial placed these students in both face-to-face and online classes to measure whether online methods could assist their learning challenges.

Figure 3: Comparison of Online vs Face-to-Face for Disadvantaged Participants.

Interestingly as is shown in Fig. 3 participants in this category achieved much better outcomes when in an online group as compared to a face-to-face group. Those participants with physical disabilities improved from an average face-to-face result of 61% up to 74.5% when in online classes. Participants with language/culture issues also showed improvement going from 39% in face-to-face classes up to 61% in online classes. This improved ability to engage and transfer knowledge to these particular groups through the use of online methods was unexpected and offers potential. With both international and disabled students playing such a large role in creative communities and interaction, these results were an important finding from this study.

Conclusions

Overall this project has demonstrated that creative communities can be successful in either an online form or in the more common face-to-face scenario. The results show that online methods offer slight advantages for broader creative learning and outcomes. This matches the findings of online studies in other fields of education (Means et al 2009, Herbert 2007) and is most likely due to the participants ability to go back and review or repeat materials at their own pace and in their own time. Online creative methods offer the potential for the participant to take control of their own learning style and pace and this empowers the student. This ability also plays a role for the participants who have difficulty with language, culture or physical disabilities. These participants, who under normal circumstances fall behind in face-to-face classes can control the pace of the material in online delivery and, as this study has shown, this ability leads to improvements in learning outcomes for these particular groups.

Despite these positive outcomes online communities do have many challenges, in particular in addressing the participant engagement and satisfaction issues. Online groups achieved better learning outcomes, yet they found
their courses less engaging and reported lower levels of satisfaction. Providing more personalization of online teaching resources helped to improve engagement (eg. personal one-on-one lecture rather than lecture to a large theatre) but online methods were still a less desired form of learning, engagement and community experience. For creative courses where the practical element is a significant one, bringing that engagement into online resources is critical. In reality the assessment tasks were the key factor in driving participants to engage (in both face-to-face and online) and these need careful consideration in developing future online resources and communities.

The surprising finding from this project was that online methods led to participants being more willing to take risks with their creative projects. Feedback indicated that the sense of anonymity in the online community played a role in this. Participants reported that the level of anonymity provided in online learning allowed them to put forward concepts that would be held back in face-to-face classes. In a creative sense this is an important finding as it may allow for the future development of online methods to encourage more risk taking through this ‘virtual anonymity’. In addition the lack of ‘community engagement’ led to each student developing their own work rather than being influenced by others, thus leading to greater diversity of creative outcomes. On the whole this combination led to a broader range of more creative possibilities.

Overall this demonstrates the potential for online communication at the core of online creative communities, there are clearly still many steps needed to refine this area but there is also significant potential. Clearly online methods can be effective in transferring knowledge they can also help assist those who are struggling to engage in face-to-face scenarios. The challenges in online engagement are significant and a key issue for the successful development of future versions of creative online communities.

References


