# WikID Ways: Introduction of wikis to studio teaching in industrial design

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ABSTRACT

Industrial design practice has evolved with increasing use of software and digital platforms for project work. Whilst Higher Education courses provide digital skill development, and the student work is often completed on computer, studio teaching practices have not evolved to maximize the opportunities of this digital environment. Studio teaching practice has traditionally consisted of folio and presentation material. The folio is the record, and the presentation material the outcomes, of the project. Central to the studio model is the engagement between lecturers and students around the project work in regular critique sessions. Wikis are one of several online tools developed for use in an educational context and offer particular interest for a program like industrial design because of the capacity to manage and share visual and audiovisual material. This paper demonstrates that wikis are a not only a practical tool for use in studio teaching but offer some advantages. They can better integrate digital and non digital skills and must be seen as an enhancement rather than an alternative to face to face studio practice. Wikis were adopted in design studios of between 15-20 students and setup with a studio home page as well as individual wiki pages for each student. Traditional sketching and model making skills were not abandoned, but merged, with high level CAD and prototyping techniques.  Tools such as digital photography, digital video, audio feedback, digital folios, and online delivery through blackboard are all part of the mix that enables this new approach. Traditional pinups of drawings and posters have been replaced with wikis accessed online and presented with data projectors. - Staff report many efficiencies relating to setup, feedback, collaboration and assessment. Access to material before, during and after studio sessions enabled students and staff to gain a greater appreciation of the work and allowed for enhanced reflective practice.
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INTRODUCTION

The reality was not a disappointment.  "*I was so excited to see the work in the flesh...... I had followed its development over the weeks on the wiki.*"  These comments by a studio lecturer and examiner followed a recent studio project in industrial design.

Wikis enhance studio teaching in industrial design and provide much needed efficiencies.

The great thing about a wiki is that it allows students who are no longer regularly in a studio space physically to have a learning experience as good, or better, than if they were attending traditional on campus dedicated studio spaces. This is particularly true of the non-contact study hours, which for most design studios is commonly three to four times the contact hours. A wiki is particularly good at offering staff and students insights into process rather than outcomes. Students gain an understanding of *how* something was achieved rather than examining *what* was achieved. Wikis also provide a viable option for the record of process when a range of digital skills and methods, as well as traditional skills and methods, are employed on a project.

## I. BACKGROUND

*A.Overview*

*The emerging social dimensions of the Internet are exemplified in new and dynamic interactive tools such as blogs and wikis. Social networking is a popular pastime for many students, and increasingly, such activities are transgressing institutional boundaries such as the provision of virtual learning environments (Wheeler and Whitton 2007)[1].*

Within this global environment wikis are now common features of online academic software such as Blackboard which are used widely by Higher Education institutions. The origins of the term wiki can be found in the Hawaiian phrase 'Wiki wiki' - meaning to hurry *(Wheeler,Yeomans, and Wheeler 2008)[2].* Several observers have commented on the ease of use and flexibility of wikis. "*….wikis are certainly quick and easy to set up and learn to use. It is perhaps one of the most flexible applications found on the social web, and can be used in a number of valid educational contexts. Wikis house a shared web space which all users have equal access*

*to, and include toolbars to import images, create hyperlinks and modify text " (Wheeler,Yeomans, and Wheeler 2008)[3].*

Only recently has broadband and mobile internet communications enabled the simple and practical recording of student work. Social networking sites like Facebook, MySpace and Twitter have developed a self publishing generation who seamlessly gather and publish content. A practical example is how quickly images of natural disasters are published by onlookers of all ages as *"tweets"*.

*B.What is a wiki?*

Online educational software such as Blackboard provide wikis as a feature with basic tools for managing content.
A wiki is essentially a collaborative website which can be edited and modified easily. Settings allow content access to be moderated for privacy or confidentiality, however in a studio setting all participants are encouraged to publish material which is open and public. Private comments and consultation can take place outside the studio wikis. Staff can use a wiki to: observe student project progress; present selected uploaded work to the studio; provide written feedback and comments; upload audio recordings for feedback; and to upload photos or video recorded by staff in studio.
Students can used a wiki to: upload images, photos and video of project progress; display research boards; provide links to websites; display relevant web content; upload pdf , CAD, or digital folio files; display project presentations; view other students progress; comment of other students projects; and present their project work.

*C.Wiki content*

Original drawings and sketches are required to be scanned or photographed before they can be used in a wiki, or as part of a document uploaded on to a wiki. Mockups, models and prototypes need to be photographed or video recorded. Digital cameras, phone cameras, along with advances in image manipulation programmes make this task practical for current students and the broad availability does not affect equity. Quality rendition of images is not critical as the wiki is a record of process and originals would be submitted in class or requested if required. Original sketches and drawings can be scaled, cropped and touched up to enhance the meaning or communication of the final presented folio pages. Software and hardware developers are now providing real alternatives to traditional skills and techniques, with Wacom tablets used for concept sketching and idea development fast becoming preferred to paper based sketching and idea generation. InDesign, Acrobat Professional and other publishing tools allow project work to be assembled into a narrative form very easily.

## II. STUDIO TEACHING IN INDUSTRIAL DESIGN

Traditional models of studio feature some key aspects such as; space, critique, pinups, reflection, folio, and presentation material. Space is the location where work is undertaken, displayed, presented and critiqued. Critique is where lecturers and students engaged in discourse. A pinup is a where 2D work; posters, sketches, printouts are all pinned up collectively within the studio space. Reflection is the opportunity to see all studio participants work evolve and develop. Folio is the collated record of project and process. Presentation material is the posters, presentation boards, models and prototypes which are the outcomes.
A design studio is not one on one teaching. It is a form of group learning and as such a community is required to be established amongst students for the model to work at its best. Normally, together for just one four hour session each week, across a twelve week semester, a lot is expected of tutors and students in building this required community. It is usual for a lecturer to seek a suitable physical studio space to facilitate the studio dynamic they prefer. The preferred model of permanent studio spaces for students, with visiting tutors, is rarely a reality in current Higher Education programs due to fiscal constraints. The wiki has great potential in building and maintaining this community component amongst students. A wiki provides a 24/7 virtual studio space and can be customised to the needs of the particular studio.

During a studio, staff utilise the large amount of work from the individual students, to impart understandings of the practice of design to the group. To do this effectively work must be displayed, or access to it, facilitated. The wiki can deliver in real time a project's progress and record sequentially the stages undertaken by a student. Importantly the access to this work is not limited to studio sessions. Regular contact through a semester with the project recorded in a wiki builds a deep appreciation amongst students of process.

## III. THE CONTEXT

*A.Adopting Wikis*

Wikis were adopted for several industrial design studios at a large urban University of Technology. Experience from three studios over four academic semesters and two wiki software platforms provided experience relevant to this paper. STUDIO Z is the most recent and provides all the data and discussion in this paper. STUDIO Z was a collaborative twelve week studio with 16 industrial design and 12 textile design students. The studio had two stages. Stage 1 was a collaborative cross discipline group project with weekly presentations and a final group project submission at week 6. Seven groups consisted of roughly equal numbers of industrial design and textile design students. Stage 2 was an individual project derived from the collaboration but undertaken by only the industrial design students and completed by week 12.
STUDIO Z wikis were set up inside a Blackboard shell. During the first stage seven wikis were set up, and in the second stage only one was required. The seven group

projects had a wiki with a home page (Figure 1) with individual student pages created within that wiki. Open editing rights allowed additional pages to be added to suit group requirements. Stage 2, with the single wiki, had a home page then individual project pages (Figure 2) with sub pages added as required by the students. All staff and students had access to all wikis.

There were few rules applied to the structure and content of all wikis and students adopted individual approaches to methods of recording their work, choosing a variety of formats and approaches to uploading and displaying content. Wikis content included the following: jpg or gif images, animated gifs, MPEG videos, pdf files, Cad files, audio recordings. The richness of content and record of process far exceeded staff expectations and contributed significantly to studio discourse. Structured studio sessions requiring presentations ensured uploaded content was known and familiar to all.
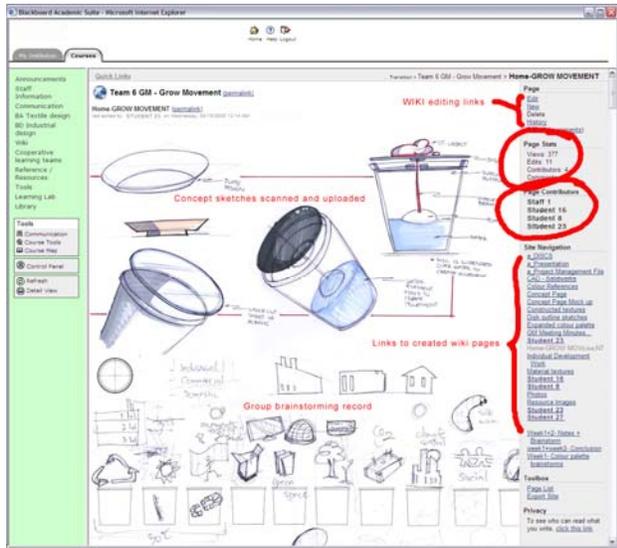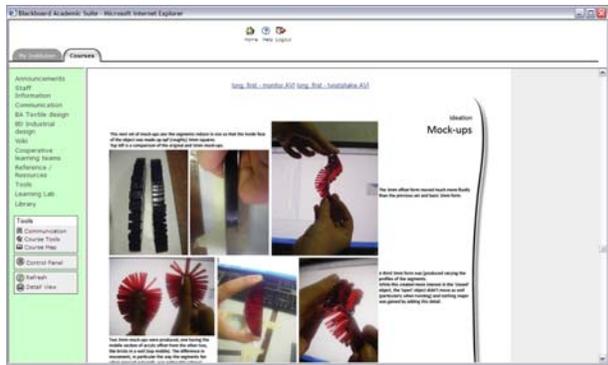


FIGURE 1 - SAMPLE GROUP WIKI PAGE



FIGURE 2 - SAMPLE INDIVIDUAL PROJECT WIKI PAGE

*B Active engagement and usage data.*

The feedback from teaching staff and the assessment panels was that the students were engaged, worked well in groups and that the work reflected high levels of motivation. This was supported by data available from the statistics tracking feature in Blackboard. Online participation from the 28 students and 2 staff was very high in Studio Z with a total for the semester of 3940 page views. The average student page views were 14 per week for the twelve week semester. Page visits to the wiki home page of each of the seven studio group projects varied from a high of 563 views to a low of 282 views. (Figure 3). Page visits to the wikis for the sixteen individual student projects varied from a high of 167 with 17 edits to a low of 60 with 3 edits. (Figure 4) Overall page visits recorded in the blackboard shell were highest with staff, however were high to very high, from all students. (Figure 5). Active staff engagement was important given the use of wikis was not familiar to students. Available data on the hours of usage was also very positive showing a constant and even spread between 9am and 11pm. The wikis were used constantly and the data supports the observed broad and continuous active engagement with wikis during contact and non contact hours (Figure 6).

| GROUP WIKIS | GROUP 1 | GROUP2 | GROUP 3 | GROUP 4 | GROUP 5 | GROUP 6 | GROUP 7 |
|---|---|---|---|---|---|---|---|
| Page Views | 487 | 501 | 282 | 563 | 468 | 422 | 375 |
| Edits | 12 | 57 | 5 | 10 | 23 | 11 | 11 |
| Contributors | 5 | 5 | 3 | 2 | 3 | 2 | 4 |

FIGURE 3 - GROUP PROJECT WIKI PAGE VIEW DATA
12 WEEK SEMESTER

| INDIVIDUAL PROJECT WIKIS | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Student Project | P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 | P9 | P10 | P11 | P12 | P13 | P14 | P15 | P16 |
| Page Views | 167 | 86 | 120 | 106 | 80 | 70 | 99 | 60 | 133 | 82 | 94 | 81 | 75 | 94 | 98 | 57 |
| Edits | 17 | 8 | 28 | 14 | 5 | 5 | 8 | 3 | 19 | 5 | 4 | 8 | 10 | 12 | 18 | 1 |

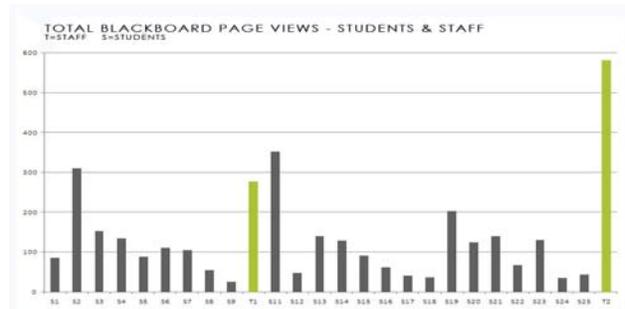FIGURE 4 - INDIVIDUAL PROJECT WIKI PAGE VIEW DATA
12 WEEK SEMESTER



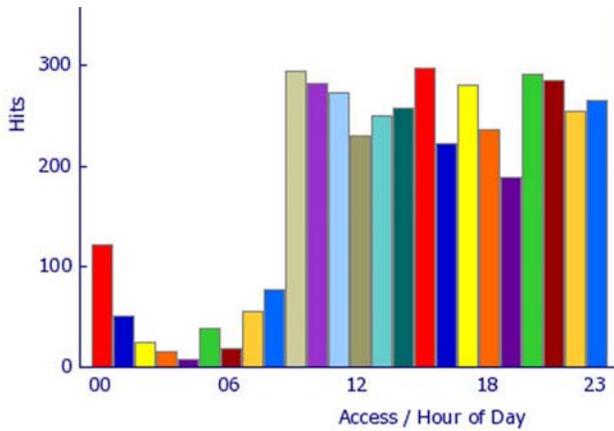FIGURE 5 - TOTAL BLACKBOARD SHELL PAGE VIEWS
OVER 12 WEEK SEMESTER

3

FIGURE 6 - USAGE BY HOURS OF DAY OVER 12 WEEK SEMESTER

## IV OUTCOMES

### A. Return of access to shared experience.

A significant advantage offered with wiki based record of process is accessibility. The opportunity for learning for the student is no longer just the contact studio sessions. This aspect used to be the cornerstone of studio based learning in fixed studio spaces where the individual is informed by the work of others; seeing it evolve around them, asking questions, observing failures, evaluating decisions and processes of peers. The wiki returns much of this once common richness, stripped away in an era of fiscal restraint. It is important to emphasise that the value is as an enhancement and not a replacement of face to face studio practice.

### B. Benefits to assessment.

Assessment is assisted in a practical way because wikis are an on-line tool and therefore the physical drawings, posters, models and folios are not required to be managed by staff. Issues of damage or loss to original works are gone, flipping through large heavy folios is not required, or managing files sent in emails or on discs no longer necessary. Staff can mark remotely, at any time, and all work is available to all assessors for review. Assessment can take place without the need for staff to be together. Importantly from an assessment perspective the tools exist to monitor and verify the active engagement of the students.

### C. Improved collaboration.

The collaboration required in STUDIO Z was well facilitated by the introduction of wikis. Minutes from meetings, records of brainstorming activities, images of prototypes could all be shared easily. In addition to wikis, email, sms, mobile phones, Facebook and other tools were used by students to work collaboratively. The wiki however was the place where project work resided.

### D. Efficiencies

The effective use of the time spent together as a studio group is critical to maximise learning. Data projectors and wireless connectivity in the studio space enables instantaneous access to student work that has been loaded on to a wiki prior to class. This greatly reduces wasted time managing posters and pin-ups, not to mention the saving in materials and expense to the student. The projected image is large, can be zoomed in on, and is able to be seen by all - even with large class sizes. All uploaded content on a wiki can be accessed easily providing a great deal of flexibility in a studio session. [eg] *"lets look at this now"....* and it is available. A traditional studio can have this richness but the studio often wait for work to be located before it can be presented, *"....... it's here somewhere"*. Digital content can be viewed and scanned much faster than sketchpads and drawing folios. Media platforms such as video and audio are also enabled. Less time is required between student presentations and time is not spent packing up.

### E. Reflective practice.

Students have instantaneous access to all fellow students' wiki content which enables opportunities for reflective practice. This reflection is also likely to be happening at the right time, when the student choose to seek out the work, and they choose when to view it, rather than in the studio as part of studio discourse. Staff can pose questions or request responses relating to posted material. Staff can, following a studio session, upload extra related material. Audio feedback can be recorded at key points in the studio and it is practical to up load to the wiki at the conclusion of the studio session.

### F. Alternative record of process.

The wiki importantly provides a sequential record of the design process. It also brings together the diverse digital outcomes and merges them with non digital material like sketches, mock ups and prototyping. The folio or sketchbook has long been the preferred record of process. These wiki based studios have provided evidence that a wiki can be a significant improvement in the recording of process. Importantly one that maintains the efficiency appreciated in the folio or sketchbook. Data on when, where and how a student work has been undertaken is not usually available and would normally require detailed verbal explanation. Evidence of the nature of the student's experience of learning is provided and can be reflected upon.

Students intuitively recorded and uploaded key stages of their design process. The tools were at hand, no longer do students have to plan to do a photo shoot, or arrange for lighting, or hire equipment. The recording devices are carried with them.

### G. Sharing

Sharing the studio work with interested external staff, students or industry is easily facilitated. Once invited into the wiki guests can view only, or if they desire, participate fully in the studio. This is particularly practical for important feedback and consultation with industry. The 24/7 flexibility enables valuable contributions from full time industry collaborators. This also reduces the complexity of

management of studio timetabling for external guest lectures or key project briefings. The pre recording or post recording of studio lectures and events also keep all studio participants involved.

*H. Feedback*

In studio teaching feedback or critique provided as part of the studio discourse seeks to challenge and intervene either to assist the individual or the group. It is important to the studio model that this intervention is available to all the studio members. Individual student consultations have always occurred between timetabled classes however unless the students meet socially or as part of a group activity the feedback could not be easily shared. The outcomes of individual consultation can now appear in real time on the wiki and as such be shared.

## v. REFLECTIONS

It is important to outline things learned from these wiki based studios. It was key to commit to using the wiki as the primary in-studio mode of presentation. Time was allocated to viewing uploaded wiki content prior to class. It was usual practice to navigate through the wiki week by week building familiarity, and conveying to students a grasp and awareness of uploaded content. It is important that studio spaces are equipped with permanent data projection and reliable internet connection. Engagement with and being responsive to content as it is uploaded is important - this is no different to engaging with a students work in a pinup. Provide all studio documentation and content via the wiki and blackboard. Upload copies of all handouts or reference material. Set assessment tasks that require wiki participation and usage. Where practical upload your own record of studio activity, in class or immediately after.

## vi. CONCLUSION

Two years ago I had not heard of a wiki and I know that many colleagues are sceptical of much that is on offer in the online teaching realm. The studio model of teaching is well developed and popular in its traditional form. Adopting and exploring wikis in your individual teaching practice is encouraged as I am convinced they significantly enhance the studio teaching model in industrial design.

## REFERENCES

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