

THUMBNAIL SKETCHES ON IDEA DEVELOPMENT: THE DRAWING BOARD VS COMPUTER-GENERATION

Edward Appiah

Cape Peninsula University of Technology, Cape Town, South Africa

Johannes C. Cronjé

Cape Peninsula University of Technology, Cape Town, South Africa

Abstract

This paper is an outcome of a survey that sought to find out the extent to which graphic design students are inspired by Information and Communication Technology (ICT) in using thumbnail sketches in their design process in a university in the developing world. In situations where ideas development in graphic design moves into the digital domain, with developing countries also embracing ICT and its technologies, change in pedagogy in graphic design education should be envisaged. The possibilities of design students avoiding the rigorous traditional use of thumbnail sketches was put to test as students these days spend long hours on the computer in their design development. Using analytical survey, data was analysed in reference to students' perception on ICT in the design process. It emerged that students go through their idea development now using computer-generated ideas in their development stages against the traditional thumbnail sketches. The findings highlight a review of current pedagogy of design education, especially in the area of idea development to reflect the emerging trends of ICT in graphic design education in developing countries.

Key words: *brainstorming; computer-generation; idea development; thumbnail sketches*

INTRODUCTION

This study is situated in an African country where computers are a relatively new introduction to the teaching of graphic design. In the last decade graphic design education in developing countries in Africa has seen the introduction of the internet, sophisticated computer packages for drawing, image making and typography. As graphic design educators we have seen changes to students' design work which no longer appear to conform to our expectations, because of the impact of ICT. In particular we see that students no longer use thumbnail sketches as a fast means to generate ideas from which they can refine and develop a finished design.

Traditionally, in the process of graphic design, thumbnail sketches aid designers to brainstorm in an effort to create new ideas (Jonson 2005, Tan & Melles 2010). There seems to be some perception with design educators to the view that there is no major creative work without thumbnail sketches. Design students in Africa are therefore trained to hold on to the tradition of going through thumbnail sketches in their sketchbooks before transferring them to their design work on computers. With the introduction of Information and Communication Technologies (ICTs), including computer technology, the pedagogy of graphic design is changing the way students currently go through the design process (Yeoh 2002). Students are spending most of the time on the computer in developing their sketches for the design process. With such situations, can the design process rely strictly on the traditional thumbnail sketches for successful idea development?

In the graphic design profession, many factors such as deadlines, budgets, production and logistical concerns, as well as client-imposed restrictions can influence the design process (Resnick 2003) and therefore designers are also finding quick and alternative ways of creating good and creative designs within the limited space of time depending on the day's pressure (Owens 2006). Technological advancement and the introduction of ICT is playing a dominant role in designers' creative endeavour while aiding the design process (Swanson 1998).

Graphic design students from the Department of Communication Design, within the Faculty of Art in the Kwame Nkrumah University of Science and Technology (KNUST), Ghana, have been required to supply a lot of thumbnail sketches on paper in support of their finished design piece. They do this to fulfil pedagogical requirements and tutor expectations of the design process. Anecdotal evidence shows that these are actually done after the execution of the final design for assessment, even though these sketches are supposed to be done at the developmental phase of the design process (Reffat 2007). This however shows a form of deviation in students' ability to strictly follow the design process in terms of doing thumbnail sketches, as traditionally required by the tutors and indicates that there is a transition from traditional pedagogies and expectations, influenced by the introduction and access to computers, not previously available in this particular context. Currently, about 85 per cent of the students' population own their computer (be it a desktop or a laptop) against a ratio of twelve

students to one computer a decade ago, even though computer labs are still apologies of design studio.

This study attempts to answer a critical question; what actually influences the creative drive among graphics students; where do these ideas originate in this day of ICT when students have literally ignored the recommended 'structured stages' of idea development?

The paper initially discusses the various literature for and against the use of traditional sketches in the design process. Other methods of creative thinking are also assessed against the backdrop of thumbnail sketches and later discussions and results on students' perception on ICT in thumbnail sketches.

LITERATURE SURVEY

The traditional method

Traditionally, the designer's way of thought has to go through the design process to communicate effectively (Bender 2005). The design processes - problem identification, brainstorming/thumbnail sketches, roughs, finished rough/comprehensive, and the final design – will have to be followed as if it is a laid down rule (Schon 1998; Cross 2001)(see figure 1). Altering it could endanger the smooth process of idea development. Even though this is done in line with the creative process such that when a problem is identified, the relevant ideas are still encoded in the subconscious mind and then given 'life' by the use of thumbnail sketches.



Fig. 1: The 'traditional method' of design process

The design process is placed in line with the process of achieving a solution in the field of graphic design. The design process however, does not necessary follow the iterative sequence described. Divergent functions are the ones by which different options and alternatives are opened, expanding the space within which the design process proceeds. Functions related to the generation of alternative solutions, or searching for new

information, pertain to this category (Mioduser & Dagan 2007). The design process can also be said to be made up of a series of phases, in each of which certain procedures predominate, and by means of which the designer makes progressively more clearly defined conjectures about appropriate solutions, while rejecting inappropriate ones (Schenk 1991).

The design process could be seen as the constituent of following through this process. A major issue is, when and how to put the pieces together until the creative ideas burst from the preconscious, processing into conscious awareness. This idea is also consciously verified, elaborated and then applied as in verification and must be represented in either two dimensions or three to give its graphic perspective. It means the process might be the 'lateral' sequence of actions as we are made to believe. But the primitive thought which sparks idea development that is externalized can lead to a continuous cycle of repetitions of imagery and representation until, at one point, the designer decides to draw sketches (Hasirci & Demirkan 2007).

The nature and qualities of the design process is conceived as a creative, branching, iterative, and cyclical process based on multi-disciplinary knowledge. This process has to meet the requirements of products-production processes, which is, to be structured, to proceed in stages, to meet schedules and to be clearly product-oriented (Mioduser & Dagan 2007:2). The purpose of graphic design education is to prepare students for the professional practices (Resnick, 2003:16). It is therefore project-based – a pedagogy of design education which stems from the Bauhaus ideology of studio method of teaching and continues to constitute the curricula today (Broadfoot & Bennett 1991) - rather than subject-based listing. It can be seen as a process of informed synthesis, through articulation of models, diagrams and scenario visualizations, design education today can now match the complexity of real world situations and has become the premise for assignment design (Ranjan, 2005:1).

For the designer, any entity can be a source of inspiration or reference for conceptualization. Such can be just small sketches or numerous doodles that have been inscribed somewhere. This could be refined or could set the tone for another ideation process of design to begin. Within several sketches at the conceptualization stage, the most 'suitable' ones are picked, refined and applied as a solution to a design problem. Such 'sketches' or 'ideas' could necessary not be the numerous traditional thumbnail

sketches required and could also be less than the 'minimum number', as required by the educator (Hodge, 2009).

Design process

Wallas's (1926) analysis of design as preparation, inspiration and verification has been elaborated by Ward (2004) who proposes that the incubation in creative problem-solving enables the "forgetting" of misleading clues. Absence of incubation may lead the problem solver to become fixated on inappropriate strategies of solving the problem.

Barron (1988), thinking along the same lines, places great emphasis on subconscious and chance processes in the creative process. In a four-phase "psychic creation model" he rather proposes **Conception** (in a prepared mind), **Gestation** (time, intricately coordinated), **Parturition** (suffering to be born) and **emergence** to light. The tone of Barron's model supports the popular view of creativity as a mysterious process involving subconscious thoughts beyond the control of the creator. Perkins (1981) in contrast argues that subconscious mental processes are behind all thinking and, therefore, play no extraordinary role in creative thinking. Just because we cannot fully describe our thought processes does not mean we are not in control of them.

Today the design processes adopted for creative work in design has been derived from the "Ideation" models. More importantly, creative thinking tools such as brainstorming enables one to have vast ideas to choose from. Doing thumbnail sketches or preliminary drawings, also referred to as idea development, has traditionally instigated these. Commenting on the role of drawing in the design process, Schenk (1991) sees drawing as a vehicle for creative interchange in group sessions whereby the designer shares and stimulates ideas. Accordingly, many designers use drawing to develop their visual literacy and fund of 'stored analogy' to support creative behaviour (p. 181).

The design process in idea development

Expanding Wallas' (1926) model along with the creative process of idea development Kneller (1978) proposes four distinct processes as **preparation, incubation, illumination**, and put **implementation/verification** as one step. In incubation, Wallas believes the conscious and subconscious mind are working on the idea, making new connections, separating unnecessary ideas, and grabbing other ideas. Illumination which is the "Eureka" moment is considered the emergence of a solution almost out of thin air

at an unexpected moment (Hegeman 2008) and occurs when perceptions are restructured in the mind and ideas are integrated in found solutions (Cross 1997). And when it hits, the creative urge is so incredibly strong that one loses track of other happenings. At this stage designers only see the creation at the end. They do not recognize or care much about the processes that generated that idea, especially when clients, supervisors, lecturers, and directors expect the end product on a certain schedule as in the design profession. Designers know that for every good idea, there are at least a few that do not work out, but they cannot know ahead of time what and how it is going to work and what will not. This does not exclude the traditional method of ideas development. It is at this stage that thumbnail sketches become useful in plotting out ideas for the process.

Thumbnail sketches in ideas development

Thumbnail sketches are a series of small-unrefined drawings; just brainstorming ideas that will be refined in coherent design later. It is about an exploration of over 60 possible solutions, narrowing down to just a handful of best ideas (Hodge 2009). In other words, one works through and generates multitude of ideas in a relatively short period of time.



Fig. 2: Thumbnail sketches for *BioTrekker Logo Design* (Designer: Karley Barrett)

Significance of thumbnail sketches on in creativity

Hodge (2009), supports the idea that putting ideas quickly on paper is the only way to evaluate them to see if they are worth exploring further. According to him, computer renderings and modern CAD and modelling packages are great, but thinking on paper with a good old-fashioned pencil is always the place to start.

In dealing with clients, Hodges (2009) advocates that showing sketched thumbnails or compositions to clients, will potentially save you an enormous amount of time as they explain how early in the process you get client approval. Arguments in support of traditional thumbnail sketches in briefs include giving students the license to think freely and creatively and come up with several good ideas that might not otherwise surface. They enable designers to draw quickly and without thinking too much about the end results at this point. They also help designers to think faster and open the creative doors to designers and enable them to select a favourite composition using the selected thumbnail sketch to develop their designs.

Idea development beyond thumbnail sketches

Despite these thoughts, it is significant to know that, other latent attributes do become engaged in the ideas development stages. This stems from the fact that creativity does not take place ex-nihilo (Ward 2004). Existing images, ideas, and objects are mostly resources one scans through for the most effective result. Creating from an existing idea calls to mind brainstorming for ideas. This brainstorming may go with or without the traditional thumbnail sketches. With the advent of ICT and the Internet, together with the revolution in the graphic design industries, designers offer series of ideas and templates in magazines and dailies. Also available are 'shutter stocks' and 'image banks', where one can copy a lot of images and layout which designers incorporate in their creativity process. With these resources to hand do graphic designers these days need thumbnail sketches since the design processes were developed in an era where there was no internet technology?

In the field of computer science, it is called 'generate and test'. In elementary algebra, it is "guess and check". This can be seen as an approach to problem solving and is contrasted with an approach using insight and theory. In trial and error, one selects a possible answer, applies it to the problem and, if it is not successful, selects (or generates) another possibility that is subsequently tried. The process ends when a possibility yields a solution. In this level of developmental series, the designer makes thumbnail sketches with the problem in mind. These sketches are analysed and those, which cannot meet the specification, are discarded. These can take place on the computer with the right kind of software or tool relevant for the designer.

Creative processes involve divergent thinking, which is the ability to come up with new and unusual answers where multiple responses which can potentially satisfy a problem, thumbnail sketches in graphic design represent a concrete example of divergence, which then present opportunities to refine potential solutions.

Taking an old design and manipulating as a new design as quick as possible can sometimes required deductive skills of convergent thinking solution with the purpose of arriving at one identifiably correct answer for idea development. The Internet is aiding most designers today, limiting them of the hassle of thumbnail sketches by providing the necessary options of designs for which the designers can use in their creative works. As design educators, this becomes worrying as the pedagogy calls for students to engage in idea development to create their own concepts for design solutions. Currently, ICT is providing vast information on most subjects that designers wish to research on. It is possible to get images of people using the digital camera or digitizing photograph or art piece like mosaic, painted works by scanning them and later manipulating them on the computer. This becomes acceptable when students have already developed their own concepts. There is no doubt that there may be fundamental issues that need to be confronted in terms of current pedagogy, especially when it comes to the use of ICT in the developing world. Graphic design educators in the developing world will have to realise the paradigm shift in the pedagogy of graphic design, especially with the emergence of ICT in the equation and make necessary efforts in overcoming these challenges.

As students appeared to be influenced by the ease which they could access and modify existing images on the internet and to abandon the use of thumbnail sketches as a means of generating ideas, we sought to find out how design students today initiate their creative works. How and whether they create through the traditional use of thumbnail sketches on paper or just by image modification. We also wanted to understand their perception of ICT in today's design process.

METHOD

Participants

The population under study was the students of the Department of Communication Design at KNUST, Ghana. The population of students of the department is five hundred

and eighty-seven (587) out of which two hundred and six (206) are females and three hundred and eighty-one (381) are males.

The study was further targeted to only third and final year students of the department of Communication Design, which is 132 and 172 respectively. The communication design course is currently a four-year degree course, leading to a qualification of an honours bachelor degree in communication design.

The researchers assumed that the target population is a true representation of the Department of communication design who could provide credible information for the research question based on the following:

1. The students of communication design undergo the design process during their practical works after two years of basic design where thumbnail sketches are the fundamental approach to the design process.
2. The third and final years have learnt the discourse of design and gained enough practical work experience both academically and at internship
3. During the internship, they were exposed to conditions working under serious supervision and stress, where they also had some experience in actual designing within real-life situation at professional design studio
4. Their experiences could enable them to give practical responses to the research questions.

We used the analytical survey method, which had quantitative or numerical data being analysed using appropriate statistics. Primary data through questionnaires were later analysed and interpreted using a standard statistical software package (Gravettor & Forzano, 2009) Statistical Programme for Social Sciences (SPSS).

The convenience sampling technique was used in getting students to respond to the questionnaires, which were randomly distributed. Out of the 587 total populations of students in the Communication Design Department, two hundred (200) students were selected as the population sample. A total of One hundred (100) students were sampled from each of the third and final year groups. The sampling was carried out randomly as the researchers distributed the questionnaires to student just before a class session.

Out of 200 questionnaires given out, one hundred and six (106) males and Ninety-Four (94) females answered the questionnaire. Table 1 shows a detailed breakdown of gender by year

	3 rd Year Students	4 th Year Students	Total
Males	48	58	106
Females	52	42	94
Total	100	100	200

Table 1: Population and gender of respondents

Data Collection

Questionnaires were given to students as they entered the classroom. This way any student from any of the two-year groups could be considered. This was to avoid selection bias where questionnaires might be given to favoured students only. Students were encouraged to answer and return them to the lecturer who put them in an envelope and handed them to the first researcher after close of the class.

The questionnaires were in two categories of ten questions each. The first was to find out the practical views of thumbnail sketches in idea development and the second was to find out perceptions of ICT in idea development among students today. The questionnaires were designed to find out which approaches best aids idea development from the students' point of view. To this effect, the ten items in each case were weighted the same. However the two sets were all closed ended questions to avoid ambiguity in the responses given by the respondents.

Before this, third year students had just finished a 6-day project on "Branding the Entrance"; a project which allows young creatives to design a miniature prototype of a 3-D character to be displayed on the street as part of the City's Design Awareness Week. The character comes alive with hair-dos, dress code, and unique creature characteristics like Androids, Zombies, Robots and the rest, that could inspire to make the street entrance a memorable one. One of the aims was to explore and understand character design for a specific purpose. The fourth years had also finished with a 2-week "Creating an Identity for your Firm" where students were asked to come out with a corporate identity for their own named firm, as a way of telling the market: A New Design Firm is born. In all these, students were to:

- Create a high quality PDF and illustrator file of the final works and save in the specified folder
- Print out A3 colour lasers of final copies of work; where appropriate, neatly cut-out and assemble some in class with the rest mounted on an A2 card; and
- Submit a folder containing thumbnails/scamp works showing how the ideas were generated and arrived at.

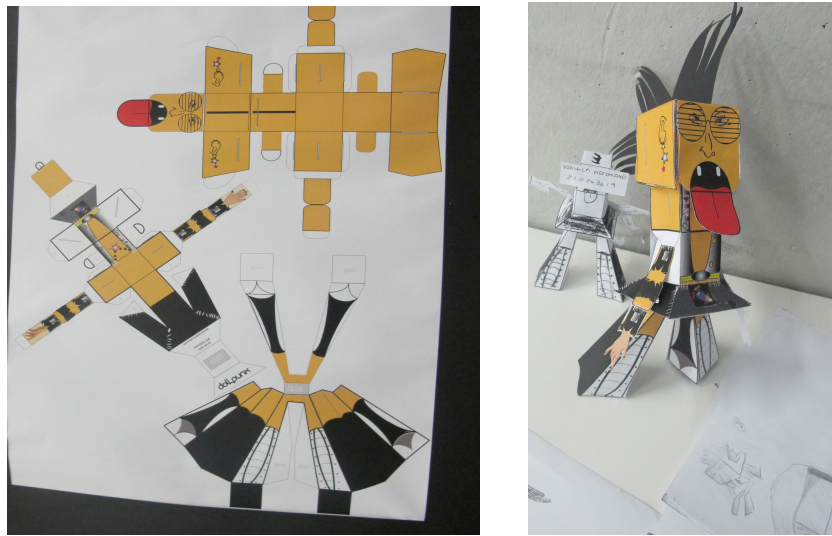


Fig. 2: Sample of a third year student's work showing the thumbnails and the finished work

DISCUSSIONS AND RESULTS

What cannot be disputed from the analysis of the dataset is that students do not like doing actual thumbnail sketches in the traditional way when they are developing ideas, even though they had indicated they do put the ideas in the form of thumbnail sketches. These are either refined ideas from the Internet or sketches they create using computer technology. This supports the idea that designers cannot do without thumbnail sketches and that thumbnail sketches help them to come out with creative works (Tan & Melles 2010). Yet they seem not to use it in the way as expected by educators in the traditional way.

More significantly, the data suggested that the use of thumbnail sketches and ICT in idea development could not be avoided as far as creativity is concern. In each case, the impact of the use of any one of them can influence students either positively or negatively. In students using any of the two for idea development, it shows their creative thinking result in the solutions to their design problems and this comes in so many ways

like rational thinking, convergent and divergent thinking, heuristic thinking and trial and error. However all these thinking processes are actualized through physical representation. And in these cases, students go through some of these creative thinking processes whilst they have the idea in their subconscious mind. To actualize these ideas they use both the traditional thumbnail sketches and computer-generated drawings but mostly the latter.

Doing thumbnail sketches as a form of brainstorming

When it comes to the issue of drafting and re-drafting to get ideas for their solutions the study revealed that;

- ✚ students declared that they do not consider thumbnail sketches unnecessary to idea development and that they do thumbnail sketches as a form of brainstorming.
- ✚ thumbnail sketches massively help them to come out with creative designs and they actually do some sketches on paper.
- ✚ students actually involved more than 10 ideas in their creative works before arriving at a design solution for their works though not up to 60 sketches (Hodges, 2009).
- ✚ students do not start their design process with thumbnail sketches in the traditional way but rather finish their final creative work before doing traditional paper-based thumbnail sketches for academic demands.
- ✚ Students declared that they do put ideas researched for in the form of thumbnail sketches. Such ideas are the refined generations they create using computer technology.

Concerning the use of thumbnails with ICT in idea development, data gathered suggested that:

- ✚ students actually use the ICT and the internet as their sources of inspiration;
- ✚ they copy ideas from the internet that suit their design by doing it exactly or adding a little to it; a worrying situation that calls for educators attention to current pedagogy;
- ✚ they can work so many 'crazy' ideas by modifying ideas; some copied from the internet;

- ✚ that they normally manipulate images with the use of computer programmes until they get their desired work;
- ✚ that students do sometimes combine traditional thumbnail sketches with computer-generated ideas;
- ✚ idea generation with the computer is very fast and fantastic. This means that students enjoy using computer technologies for idea development.
- ✚ students do not consider computer-generated ideas as thumbnail sketches too.

It could be followed here that once students enjoy generating ideas with the computer technology, they put all their energy into getting more ideas generated with the computer. Also, students use those ideas generated with the aid of computer technologies to replace traditional thumbnail sketches.

By inference, students by using computer technology, can refine existing ideas and at the same time create new ideas. The making of a sketch may help generate a mental image that, in turn, may produce more sketches which may, again, generate another mental image, and so on; a process referred to as reinterpretation and a valuable source of new and unexpected ideas (Stones & Cassidy 2010).

Looking further, students have the view that computer-generated ideas are not thumbnail sketches but they normally do thumbnail sketches after work has been finished on their creative work. To them thumbnails are just the traditional sketches done on paper. The main reason given for adding such thumbnail sketches at the end of the idea development process was for academic reasons, to fulfil the tutors' requirements for assessment.

Significantly, traditional thumbnail sketches are necessary to idea development but this is being replaced by computer-generated ideas. Students can create more computer-generated ideas for selection, leading to comprehensive concepts and final execution of the idea. The issue for academics in this setting is, should students revisit their old conventional way of creating thumbnail sketches or should they be encouraged to perfect the skills involved in the use of computers in generating ideas, since both are aimed at idea generation? This study propose educators adopting blended approach for idea development but that will also demand a clear pedagogy that will align with the principles of students developing ideas; be it from scratch or from influences of other

sources. Design educators and researchers need to do more work as these involve some pedagogical review. There is the need to develop a clear pedagogy that includes developing ideas with ICT. The use of idea generation methods needs to be made clear to students, particularly the use of other people's work to inspire students and giving references and acknowledging sources.

This study shows that as students envisaged the ideas in the subconscious mind, they go to the computer directly after they have an embryonic idea in order to find images that can help them to develop it. Also, as ICT has provided students with so many options or possibilities it is possible for students to sometimes copy layout, images or 'ideas' from the Internet which they incorporate in their designs just by refining and adapting them.

Students have actually attested to understanding several ways of creative thinking and how ideas could be made a reality. This they do either through traditional thumbnail sketches or computer generation (generating ideas through image, layout, text manipulation which are at times copied from the internet) and improving or adapting them for a particular design brief.

Significantly, students do not go through the traditional method of doing thumbnail sketches when they commence work but rather replace it with computer-generated ideas. This stems from ICT having a massive impact on idea generation. Students appear to shun the conventional method of using thumbnail sketches on paper. The bottom line here is whether students should be encouraged or supervised to do thumbnail sketches or to go on with their own 'shortcut' of computer generation of ideas. It would be interesting to take this research further to understand the qualitative difference in using the two routes of idea development. Initial thoughts suggest that using the Internet tempts students to use other people's ideas, rather than think through the construction of their own. The implication of this is the issue of plagiarism, especially when it involves other images where sources will not be acknowledged.

The studies somehow defeat the idea that thinking on paper with a good old-fashioned pencil is always the place to start (Hodge, 2009). Computer renderings are also great and the desire to skip sketching on paper and jump straight to the computer or work out your solutions as digital sketches is also a possibility. We see nothing wrong with that,

especially for one's own experimental work. It is possible to manipulate images to come out with creative works with computers. It has the necessary tools like 'undo' or 'redo' to correct mistakes. While it is possible to build sketches on the computer, it might not be as fast as sketching multiple concepts on paper but the study did not capture that aspect.

Information and communication technology has many tools that help the designer execute his ideas more effectively. With ICT, designers start their design from the scratch to the finish at times without going through the 'traditional' thumbnail sketches. Several ideas can be experimented with in order to arrive at the desired design or until a desired design is achieved, even though this may be project specific.

CONCLUSION

The purpose of this project was to find out the extent to which design students are being inspired by ICT in their idea development. Design educators at KNUST are 'pushing' learners to strictly adhere to the pedagogy of using the traditional approach of thumbnail sketches on the drawing board in their design process. Results of the study show students are rather being influenced by ICT and are using computers to develop their ideas. These computer-generated ideas are sometimes ideas that have been refined from images or existing ideas from the Internet. It was also realised that students were using relevant software for creating alternative ideas. Having been required to use thumbnail sketching as a process in their earlier years of study, students seem set for the job market as professionals, able to generate ideas in a number of different ways, appropriate to the needs of graphic design professionals.

The purpose of graphic design education is to prepare students for professional practices (Resnick, 2003). In order to meet the challenges of deadlines, budgets, production and logistical concerns, as well as client-imposed restrictions each project will require its own method of approach to the solution. Students will strongly want to adopt such approach in executing their assignments too. However, pedagogical models need to be realigned to meet today's needs in graphic design education in emerging countries.

We recommend that for pedagogical reasons, students should be encouraged to add their thumbnails to their final presentations. This could be the print-out of their computer-

generated ideas or the sketches done traditionally as sources of their brainstorming ideas. This will encourage students to be more sincere in submitting accurate works in terms of thumbnail sketches. This way, students will be 'sincere' in following through the design process. It will also encourage the proper use of ICT in their ideation process and thereby increase their creative thinking abilities. As a way of strengthening their creative ability with ICT and computer-generated ideas, students should be allowed to produce several phases of ideas generated during idea exploration, be it several layout exploration or image modification or text. This way, students will learn to be bold in developing ideas with or without ICT.

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