

# Understanding the Creative Mind: Portfolio Assessment in the Visual Arts

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## Abstract

In evaluating creative performances among students in the Swedish compulsory school, the author tested four process criteria: investigative work, inventiveness, the ability to use models, and capacity for self-assessment. What will the correlation between different judges of students' portfolios become, when such criteria are included? Is there any improvement on these criteria from primary school to the lower secondary school? These are some of the questions that the author is attempting to answer.

**Keywords:** Assessment, visual arts, process criteria, rubrics, portfolios.

Case studies of artists (e.g. Arnheim, 1962; Josephson, 1984; Lindström, 1993a) and of children and young people (Taylor, 1986; Wolf, 1988; Wolf & Pistone, 1991; Lindström, 1993b-c) show that creative work has a number of dimensions, among them the ability to adopt a number of different stances or perspectives, to harness both cultural and social resources, and to pursue ideas for a period of time long enough to allow the sources of problems to be identified, and ways of solving them to be found. These performance or process qualities cannot be measured objectively. Neither can we measure the "beauty" or similar qualities of the finished product. Nevertheless, as John Dewey points out in *Art as Experience* (1934, pp. 298 ff.), this does not prevent us from employing various *criteria* to judge the qualities we appreciate in a painting or, for that matter, in an essay, a scientific experiment or a historical study.

In evaluating creative performances for Sweden's National Agency for Education in 1998 (Lindström, 2007), we tested *seven criteria*. Three of these concern finished products, while four concern the work process. The selection is based on objectives formulated in the national curricula, on qualities that are appreciated in the art world, and on research into the creative process (for a different, inductive method for defining criteria, see Lindström, in press). The *product criteria* comprise: (1) the visibility of the intention behind the picture or pictures (the student's visual work communicates what he or she intended); (2) colour, form, and composition (the student achieves desired effects with the aid of visual elements and principles); (3) craftsmanship (the student masters materials and techniques). *Process criteria* describe: (4) investigative work (the student pursues a problem across several works or experiments, feels challenged rather discouraged by difficulties); (5) inventiveness (the student sets up problems, tries new solutions, is willing to take risks); (6) the ability to use models (the student actively searches out models to emulate); (7) capacity for self-assessment (the student describes and reflects on different qualities in his or her work). In addition, we included (8) an overall judgement in which the teacher takes into account what degree of difficulty the student masters, his or her capacity to work independently and other factors of significance.

For each criterion the assessors had to choose between *four rubrics*, each with "plus," "medium" and "minus" (that is, a twelve-grade scale), presented in a teacher's manual. These rubrics describe levels of performance on an ascending scale. They correspond to the development from *novice* to *expert* outlined by the Dreyfus brothers (1986) and thoughts

about rubrics design put forward by Goodrich (1996), Wiggins (1998, pp. 153 ff.), and others. The development proceeds from solving simple tasks with assistance to tackling complicated problems in an independent and confident way.

**Table 1.** Process criteria with rubrics

Process criteria	Expert ← -----	-----	-----	Novice
<b>Investigative Work</b>	Takes considerable pains, approaches themes and problems in several different ways and uses drafts, sketches or test work to develop the work.	The student does not give up in the face of difficulties, preferring to concentrate on a particular approach that she begins to develop and refine.	Demonstrates a degree of patience, tries out her own solutions and approaches, but does not develop them.	Gives up easily, does not follow her own ideas to completion, and only does what the teacher requires of her.
<b>Inventiveness</b>	Often sets up problems or reformulates the problems set by the teacher. Makes consistent progress and experiments regularly, is willing to take risks and often finds unexpected solutions to problems.	The student sometimes sets herself problems. She develops her knowledge, experiments fairly often and sometimes finds unexpected solutions to problems.	Can take a problem the teacher has set and change it slightly. Shows tendencies to experiment and play with colour, form and composition, or materials and techniques.	Does not set herself any problems, shows no sign of experimenting with colour, form and composition or materials and techniques.
<b>Ability to Use Models</b>	Actively searches out models to emulate and can use them in her work in a multifaceted, independent and well-integrated way.	Makes active efforts to find pictures for her own work. Demonstrates an ability to select images that suit her intentions.	The student shows an interest in other people's pictures that she or the teacher has found, but she confines herself to copying them.	Shows no interest in other people's pictures and cannot benefit from them even when the teacher has helped find them.
<b>Capacity for Self-Assessment</b>	Clearly identifies merits and shortcomings in her own work and can select sketches, drafts and works that illustrate her progress. Can justify opinions and explain why a particular result was obtained. Can produce qualified judgements of peers' work and contribute constructive criticism.	As a rule, manages to see for herself the merits and shortcomings in her work, and can select sketches, drafts and works that illustrate her progress. Is beginning to produce qualified judgements of peers' work.	With some assistance, can identify her strengths and weaknesses and differentiate between good and less successful work. Her views about her peers' work are limited to subjective preferences (good/bad, like/dislike).	Cannot identify strengths and weaknesses in her own work or differentiate between good and less successful work. Has no views about the work of her peers.

The progression on our process criteria (Table 1) corresponds particularly well to the development from novice to expert described by the Dreyfus brothers (1986) and others. The elementary level (*novice*) is characterized by expressions such as, e.g., the student “does only

what the teacher requires.” Descriptors at the next level include that the student can assess his or her work “with some help” and “take a problem the teacher has set and change it slightly.” At the advanced level (*expert*), students develop the work on their own, set themselves problems to solve, actively search out models, can justify their preferences, and so on.

All student portfolios in our study were assessed independently by both the student’s own teacher (the class teacher) and by a teacher who taught students of the same age at a different school (the co-assessor). The assessors used a teacher’s manual containing our descriptions of the seven qualities characterising the creative mind and the four levels of performance for each of these criteria (Lindström, 2007, Chap. 5). They also judged, at each level on a criterion, whether the portfolio demonstrated a performance that was slightly below, on a par with, or slightly above the average described in the manual. As a result, the level on each criterion was assessed on a twelve-grade scale.

We compared the assessments of the class teachers and the co-assessors, applying all criteria on 458 portfolios, from the second, through the fifth and ninth grades (8, 11, and 15-year-olds) of the compulsory comprehensive nine-year school, to the final year (19-year-olds) or concluding courses in the arts programme of the upper secondary school.

The material studied consisted of *portfolios* whose contents, in addition to a final product, included sketches and drafts, reflections in logbooks, models used as sources of inspiration and a 10-15 minute videotape interview with each student. The portfolios documented the students’ work over a period of 10 hours (nine-year comprehensive school) or 30 hours (upper secondary school). During this time, the students worked within a visual arts theme of a divergent nature, that is, a theme that could be approached in a variety of ways, which was selected by the teacher.

One of the methods we used to study the reliability of assessments was to calculate the frequency with which the judgements of the class teacher and the co-assessor differed by two steps or less. We considered a difference of two steps on a twelve-grade scale to be acceptable, particularly as the teacher’s manual contained verbal descriptions of only four levels of performance. Even in cases where a difference of two gives a different standard, we regard this outcome as fully acceptable. After all, judgements contain a subjective element that defies precise verbal description; they presuppose that the teacher uses his professional judgement in interpreting criteria, levels and the content of portfolios.

We found a high agreement between class teachers and co-assessors in ratings of both the students’ visual results (product criteria) and their approach to work (process criteria). In almost 3,100 comparisons between class teachers and the co-assessors from another school, there is 78 per cent agreement ( $\leq 2$  steps on a twelve-grade scale). Given that other discrepancies between the two assessors were small and indicate an approximately normal distribution, this may be regarded as a satisfactory result. Were we to consider a difference of three steps or less as negligible, which had not been unreasonable, then the level of inter-rater agreement would be as high as 90 per cent.

Thus, the study effectively refutes the idea that only superficial knowledge and skills can be assessed and evaluated. By using criteria related to visual design and students’ work habits, we managed to evade the assessor’s Scylla and Charybdis, that is, a tendency to place undue emphasis on students’ skills in the use of materials and techniques on the one hand, and a judgement based solely on arbitrary preferences on the other.

The results of our study are in conflict with the view that process criteria are intrinsically difficult or impossible to assess. Extracts lasting about five minutes each, from 46 videotaped interviews, were converted to digital format. Together with the students’ portfolios, these were put as illustrations on a CD-ROM that Leif Ulriksson produced as an appendix to the final report (Lindström, 2007). These interviews illustrate various dimensions of performance and demonstrate the kind of evidence on which students’ portfolios were assessed.

A high correlation between independent judges is a necessary but not sufficient condition for assessment outcomes to be accepted as valid. Another condition is that the ratings on different criteria are independent. Everyday experience, as well as empirical evidence from a few similar studies (Hargreaves *et al.* 1996; Kárpáti *et al.* 1997), directed our attention to the risk that both the class teacher and the co-assessor form a general impression of a student's work, which then influences their assessment on each individual criterion. It is still interesting that the class teacher and the co-assessor often had a similar general impression of a portfolio. However, a tendency to over-generalise would make ratings on individual criteria less valid.

To examine this source of error, we recruited 30 students who were close to completing their training as art teachers. Each of them was asked to assess a large number of portfolios, including videotapes, using a single criterion. They were to ignore other aspects of the portfolios than those defined by that criterion. Thus a student art teacher judging pupils' "inventiveness" had to examine all portfolios from that viewpoint alone, and ignore, for example, how successful the final product is. The portfolios were anonymous, and were sorted in random order to make it more difficult to estimate the sex and age of the pupils.

Although this procedure took several days, it proved to be a good investment. A factor analysis (i.e., a statistical technique that allows for the reduction of variables representing a particular construct) supported the assumption that teachers' judgements were strongly influenced by their overall impression of a portfolio. However, with the more independent judgements that the student art teachers made, we obtained two main factors: "product criteria" and "process criteria". All the process criteria were loaded on a common factor, as were the product criteria. None of the seven process and product criteria appeared to be multidimensional, that is, to be a manifestation of qualities in both process and product.

This outcome supports the hypothesis, on which the present study was based, that creativity in the visual arts contains two main dimensions that must be considered separately when assessing students' work. At the same time, the results show that teachers need training in applying one criterion at a time, if they are to evaluate various qualities in their own teaching and give useful feedback to their students.

The outcome of the student art teachers' assessment indicates that pupils in the comprehensive school improve their visual design and artistic skills. That is, they make progress on two of the product criteria, one which describes elements and principles of design, such as colour, form and composition, and the other the use of materials and techniques (craftsmanship). However, with regard to process criteria, referring to their capacity to work independently, evaluate their work etc., students in ordinary comprehensive school classes appeared to stagnate or show only insignificant improvement (Table 2).

**Table 2.** Median values on criteria for creative skills in the visual arts in comprehensive school. Assessors: student art teachers (individual criteria) and class teachers (overall judgement).

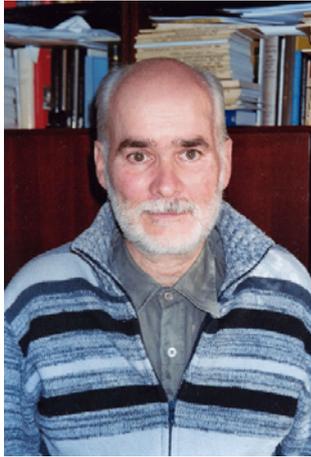
	Visibility of the intention	Colour, form, and composition	Craftsmanship	Investigative work	Inventiveness	Ability to use models	Capacity for self-assessment	Overall judgement
Grade 9	7	7	8	7	6	6	5	8
Grade 5	7	5	5	5	5	5	5	6
Grade 2	7	3	5	6	6	5	4.5	6

The process criteria show how well the school has achieved one of its overall goals: the development of students' creative skills from solving simple tasks with support to tackling

complicated problems in an independent and confident way. This is the very core of the development from apprentice to master, from novice to expert in a domain.

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