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# Dismantling the Dispositif: Social Science Experiments in the Classroom[1]

## Abstract

The following is a case study of a series of pioneering tests with visual teaching aids in elementary and secondary schools in the United States, conducted between 1920 and 1923. As it happened, these tests coincided with similar experiments in the Netherlands. Although unbeknown to each other, the innovative aspect of both studies consisted in taking their research into the classroom. With this measure experimenters in both countries hoped to collect well-founded evidence to refute what appeared to them as unfounded or overstated claims about photography-based, visual teaching aids, film in particular. While the experimenters forwent a controlled lab situation, by entering the classroom they nonetheless introduced adjustments into everyday educational practice, whether it concerned the activities required of pupils, staff, the interactions between them, and/or the composition of test groups. Thus, they changed what today one would call the educational dispostif: the arrangement of a presentation (a lesson by staff) in a designated space (a classroom with its equipment) before an assemblage of attendees (a class of pupils). Although the term educational dispositif was not current at the time, the experimenters did comment on the elements that constitute it. And given elementary and secondary education's time-honoured routines, they were bound to stumble upon these elements' interdependence and reconsider, albeit not in so many words, their conception of what goes on in a class. I largely focus on the American experiments because they are more numerous, more invasive, and more extensively discussed in the 1924 book *Visual education*. The Dutch experiments, on which I published elsewhere, consisted of two, less invasive series, conducted in one secondary school, and were reported on in two articles, in 1923, and one English translation, in 1924.

## Keywords

visual education, visual teaching aids, educational film, pedagogic experiments, educational dispositif

## Introduction

Between 1920 and 1923 a research programme with visual teaching aids was conducted at the University of Chicago Elementary School, public schools in wider Illinois (Evanston, Joliet, Oak Park, Urbana) as

well as in the cities of Detroit and Cleveland. Originally started as a doctoral thesis by F. Dean McClusky—the future authority on audio-visual instruction—, a grant by the Commonwealth Fund to the University of Chicago, in 1922, enabled additional experiments by McClusky and a dozen other researchers. The entire project was placed under the direction of Professor of Educational Psychology Frank N. Freeman, who also edited the collected research reports in the book *Visual education*.[2]

This programme of in-class experiments in parallel groups consisted 'in a comparison between various forms of visual instruction or between visual and non-visual methods', with an emphasis on film projections.[3] The programme comprised a few singular tests and roughly three dozen series of experiments conducted simultaneously or repeatedly with variations, involving test groups ranging from 20 to c. 1,500 pupils. Besides film, the visual aids investigated included slide projections, (stereo) photographs, as well as the traditional charts and maps. In other words, the experimenters restricted themselves to visual materials that *represent* objects and processes. Less singularly visual methods, such as objects and processes observed 'in their natural settings' (during an educational walk or a tour of an establishment) and 'objects taken from their natural settings' (real objects or their copies and models observed within the classroom), were not considered.[4] Insofar as visual presentation forms were compared they were duplicated as exactly as possible, to the extent that, when authorised, film frames were copied to make lantern slides or photographs; in the programme this was known as 'identity'.[5] To measure and compare visual aids' 'educational outcome' the experimenters tested pupils' memory retention based on free compositions, and understanding through completion, multiple-answer, Yes and No or right-and-wrong tests.

The abovementioned Dutch in-class experiments, too, were conducted in parallel groups in one secondary school in Amsterdam.[6] Initiated by the Pedagogical-Psychological Lab, at the then Municipal University of Amsterdam, in 1922, two Dutch psychologists measured didactic value (or 'relative educational efficacy') by testing memory retention of visually presented learning materials based on free compositions only. They, too, aimed at identity by using slides and films on matching topics from the collections of the Colonial Institute, although in their reports they defined this aim as making the experiments 'objective'—undoubtedly meant in the sense of 'procedural correctness'.[7] To guard this objectivity, care was taken to adapt each slide projection to the length of its companion film. They limited their reports to a discussion of literature and the experiments' results.[8]

Both programmes reflected a heightened academic interest in photography-based, educational devices, even though their incentives had different origins. By the time of the Dutch experiments the

use of photography-based visual aids was in its infancy in the Netherlands, the lack of purpose-made educational films being a major limiting factor. The few school cinemas—fixed projection facilities that served the schools within a municipality—that were established since the late 1910s relied largely on commercially distributed fare, often of foreign origin.[9] While the experimenters' discussion of the literature was therefore by necessity restricted to mostly German books and articles whose arguments were often drawn from 'morally degrading' theatrical projections,[10] they resisted these sources' all too negative conclusions.

How different was the situation in the USA, where photographic, visual teaching aids had become increasingly available since the turn of the century. Organisations (e.g. National Academy of Visual Instruction, founded in 1920; Visual Instruction Organization of America, 1922; NEA Department of Visual Instruction, 1923)[11] as well as specialist journals (e.g. *Journal of Education*, *Screen Educational Film Magazine*, *Visual Review*, *The Educational Screen*), surveys, courses, and university departments and extensions proliferated. This amalgam of initiatives and institutes was commonly called the visual instruction movement.[12]

By his own account, however, Freemans's programme was rather a response to the marketing discourse about these new teaching aids. In his view, acceptance or rejection of visual aids, particularly film screenings, was often based 'on the ground of opinion', notably claims about their potential to replace teachers or accelerate education.[13] From an advertising campaign he quoted what he called 'the most grotesque [of] arguments (…): 'What goes in one ear goes out the other, but what goes through the eye sticks, as there is no hole in the back of the head'.[14] This slogan was all the more deplorable given the growing use and level of institutionalisation of visual teaching aids. Indeed, the cited campaign was not only indicative of the scale of the teaching aid business and its economic interests, but also of the supply-driven market that propelled visual aids' expansion. Freeman writes: '[T]he centralization of visual education has arisen because of the exigencies of the production and distribution of materials rather than from the inherent unity of the field of visual education itself.'[15] Less diplomatically, W.M. Gregory, director of the Educational Museum of the Cleveland School of Education, wrote in 1922:

> The group of films especially prepared for schools is very small. Most of the so-called educational film consists of material that has been stripped from cast-off commercial film and retitled, and is now being offered for school purposes. Much of the film is shown in

> schools because of the novelty of the motion picture. In the effort to keep pace with the commercial exhibitor the schools frequently have disregarded quality.[16]

One of Freeman's experimenters concurred, stating that only a very small number of films produced for the classroom 'have been planned by experienced educators who have collaborated with experienced producers. Sometimes one, and sometimes the other have acted, but rarely have the two acted together'.[17]

This critical stance is not surprising given that, besides dedicated establishments such as the Society for Visual Education (the production company that had provided films for McClusky's doctoral work[18]), Atlas Educational Film Company (a division of Atlas School Supply since 1914), the Cleveland Educational Museum or a host of university extensions, the American visual education industry was a motley collection of enterprises and organisations that produced, commissioned, and/or distributed visual aids (films, slides, photographs or equipment) as ancillary, though not necessarily inconsiderable, activities.[19] Examples are corporations (e.g. Ford Motor Company, International Harvester, Western Electric), interest groups (e.g. Fruit Growers' Association of Southern California, National Dental Organization), humanitarian organisations (e.g. the American Red Cross, Y.M.C.A. and Y.W.C.A.), foundations (e.g. Rockefeller, Russell Sage), government departments (e.g. Bureau of Education, Department of Agriculture) or museums (e.g. American Museum of Natural History, New York, Field Museum of Chicago, Philadelphia Commercial Museum).[20] No wonder the industry was fully able to serve, if not impose itself upon, educational institutes.

At the time the manufacture and distribution of lantern slides and stereographs especially was characterised by an economy of scale. Many schools had a 'regular program of visual instruction', mainly in geography and history; J. Paul Goode claimed that '[stereograph] sets of views are in thousands of schools all over the country'.[21] It is hard to tell, though, whether this imprecise number would tally with a survey among 1,500 schools, conducted in 1922 by the journal *The Educational Screen*, which showed that '55.1% of the respondent schools reported that they had no visual equipment and did not intend to purchase any in the near future'.[22] Nonetheless, a nationwide survey conducted in 1923 by McClusky did show that '[s]lides were the most widely used visual media' in schools.[23] A smaller number of schools boasted a programme with film in operation for some time. In order to facilitate the conduct of its experiments the researchers, understandably, approached schools with experience in visual instruction, especially film, as 'first, the mechanics of running the

experiment would be rendered easier; and second, the subjects would be familiar with the 'film situation'".[24] While three films had been custom-made for the entire project,[25] Freeman's claim that the rest of the films in these experiments had 'in practically all cases (…) been made specifically for educational use' was contentious.[26] More likely refitted by commercial parties, these films showed deficiencies, such as title panels that could not be read from the back of the classroom.[27] What's more, it was reported that most were found to contain scientific inaccuracies, some did not even meet basic scientific standards.[28] In what follows, however, I discuss two, more fundamental problems of the American programme's general setup, the experimenters' conception of these problems, and how that affected essential and enduring elements of everyday educational practices.

## Laboratories

The most salient and consequential aspect of these experiments was, of course, their location: there where education is provided. This setting featured a long-lived curriculum of educational methods that resembled, to some extent, the experiment's goal and setup: measuring the effectiveness of teaching methods by testing pupils. Still, the research had not been commissioned by staff or management to look into questions or problems concerning visual teaching aids, but was, as noted, self-initiated. The experimenters had to negotiate, therefore, with school administrations to gain entrance and secure the compliance and cooperation of staff and, implicitly, pupils for their tests. Effectively, the research programme consisted of a number of temporary laboratories that mimicked regular activities—lessons—yet adapted them to research requirements, such as trial experiments or immediate testing.[29]

Meeting these and other conditions was not without its difficulties. The most important adaptation was that the results obtained were meant for the sake of the experiments, not the pupils. Hence, I focus on the experiments' mode of operation rather than their outcome and discuss a number of circumstances, either contingent or systemic, that the reports evince. To the former the reader is alerted in *Visual education*'s opening pages:

> We need not review here the difficulties which attach to such scientific measurements nor the sources of error which thrust themselves upon our attention. The scientific student is painfully aware of these difficulties and sources of error, since it is his business to overcome

> them. Nor need we dwell upon the necessity of resorting to opinion—based upon careful observation and a recognition of general psychological truths—to supplement our as yet confessedly incomplete scientific studies.[30]

Sure enough, errors had been detected. In one test, for instance, 'a critical examination of the test questions showed that some of their answers could actually be found in a subsequent question'.[31] As well now and then experimenters had to deal with a recalcitrant reality. For one of the larger experiments a school system had finally been found that had sufficient experience with film instruction and was willing to cooperate. Even so, the late moment of starting precluded follow-up memory tests, as the earliest possible opportunity was the new school year when many of the participating 'eight-graders had been promoted and scattered either in secondary schools or elsewhere'.[32] Furthermore, a few freak occurrences were mentioned: the noise of parents visiting a school, which disturbed a stereopticon lecture, or an influenza epidemic and the subsequent vaccination campaign that broke 'the regularity of attendance of the pupils'.[33]

More systemic conditions were related to methodology. Firstly, the abovementioned testing methods show what kind of answers the experimenters targeted. The memory as well as completion, multiple-answer, Yes and No or right-and-wrong tests predominantly aimed at retrieving factual information that had been presented in one way and/or another and was scored by points. These scores, in their turn, were taken as indicative of a teaching aid's effectiveness. In other words, 'The pupil who remembers most (of whatever it is that is considered worth remembering) has performed best'.[34] Besides a few experiments that measured memory by the performance of practical skills—position and penholding in handwriting, making an object, and baking an omelette, all after verbal and/or visual demonstrations—, by and large the relative, didactic effectiveness of visual teaching aids was measured by the number of correct answers. Rather than addressing the affordances of visually presented information this approach speculated as to the differences between the results obtained. Furthermore, pupils' thoughts or opinions, in the form of essays or drawings based on the instruction materials for instance, were hardly addressed.

The comparative measurement of a teaching aid's educational outcome, secondly, was precisely that: a comparison that had no absolute value. A contemporaneous study of teaching methods formulated such lack of relativisation most cogently:

> It is entirely possible, of course, to compare two methods both of which are poor. The results of such a study may indicate that one is poorer than the other, but, obviously, the reader is not warranted in assuming that the better of the two methods is necessarily good. It may still be so poor that its use is not warranted at all. On the other hand, two very good methods may be compared in which case the poorer of the two may still be much better than other methods which might be used.[35]

Thirdly, the programme's focus on memory overshadowed other cognitive skills. The transient images of film and lantern projections were usually shown once, either with or without an oral lesson—under the latter condition memory was about the only thing that could be tested. For instance, in one assignment, after having watched an industrial film, pupils were given a packet of randomly mixed photographs taken from scenes of the film and were asked to arrange them in the order in which they had appeared.[36] In this and similar assignments, of course, high scores did not necessarily demonstrate if testees had *understood* what they had seen.

Fourthly, to give their experiments an air of exactness the scientists adapted some of the procedures of school life, especially the ways in which test groups were composed. Most tests took place in classrooms, but not always among classmates. Instead, methods of block randomisation were applied: class-sized, parallel units composed not only on the basis of grade and age, but also on teachers' estimates, and intelligence, reading, and/or preliminary tests in the subject examined. (The Dutch studies differed significantly in this respect. As the experimenters were specifically interested in the results' distribution over age cohorts, they left the selected classes unaltered.) Regular group size, however, was often sacrificed in order to get comparable units by dropping pupils who did not match with peers of the same age—merely one of the constituent features—in a parallel group.[37] A second method was to work with test groups that were 'so large that individual differences could be assumed to counterbalance each other' and in which 'such general characteristics as age, race, social environment, and type of education' were assumed to be similar. In fact, Freeman stated that this method ensured similarities between parallel—in this particular case, unaltered—groups, as the participating schools were all located in urban settings 'so that a variety of communities were [sic] represented'.[38]

Overall, though, the research programme was methodologically unambitious, a disposition epitomised in Freeman's account of the randomisation process: 'The organization of parallel groups (…)

in this manner insures that the error which might result from a wide divergence of abilities of the children is *at least* reduced to a comparatively small amount'.[39] This rather cavalier attitude about the programme's methodology may be the reason for the awkwardness of some of the experiments' design. For instance, Freeman's quoted statement that city schools ensured the representation of 'a variety of communities' clashed with one of the larger experiments, on health-related behaviours—diet and hours of sleep—, for which pupils in the city of Joliet had to complete daily, self-report questionnaires over a period of six weeks. On analysis, though, a difference in results was found 'in those schools which represented the industrial class of the city' among whom the purchase of fresh fruit after the Christmas holiday fell victim to 'the strictest economy'. Clearly, with this experiment of mostly fifth graders in *all* of Joliet's public schools (a total of 856 pupils) the experimenters had underestimated what the assumption of pre-test group characteristics might imply.[40] In another case, of two small, parallel groups that were instructed in a topic either with or without visual materials, the results of written compositions—one of three different tests—showed a strong favour of the visual group over the non-visual group. The puzzled experimenters wrote:

> It is difficult to know how to interpret these results. In testing the results of such a procedure (…), it is impossible to say precisely what we are testing. Are we testing the ability of the teacher to use visual aids? Are we testing the individual films and slides? The only test which shows any real difference between the two groups is the composition test. This might be due to the greater stimulation of the visual methods, or it might be due to a difference in the composition ability of the two groups.[41]

All in all, the in-class experiments' manner of randomisation reveals the first of two consequential effects: the problem of extrapolating the test results, not just to non-participating classes elsewhere, but also to those in which they were obtained. The reason is that after an experiment was done classes reverted to their usual composition based on age and proficiency. And it was in precisely these regular classes that the cooperating schools had already provided visual means of instruction. Within this 'wide divergence of abilities' all kinds of bias—the industrial class!—would blur, if not invalidate, any conclusion about visual teaching aids' didactic value. As a matter of fact, the reports provide no information about how, how often, and for what purposes a school used a visual teaching aid. Effectively, then, the programme's results never left the laboratories.

Freeman and a collaborator seem to have sensed as much when they wrote that the '[s]tudy of [the] broader effect of visual aids can better be made by means of longer experiments',[42] although their notion of 'longer' was measured in terms of weeks. But to learn about these aids' didactic value they might have considered the possibility of monitoring their use during an entire school year and gauging the effects under regular circumstances, besides pupils' scores and whether they were moved up or held back at the end.

## Interaction

The rearrangements prompted by the experiments and the awkwardness they sometimes revealed also pointed to a lack of experience. For a pioneering programme this is to be expected, what with a number of relatively recent technologies and their even more recent introduction into classrooms. As Freeman acknowledged, 'very little accurate information concerning the general value of text films (…) in comparison with other visual methods' was available.[43] Even tests might not have been 'well adapted to measure the results of visual education':

> The question has sometimes been raised in regard to these tests whether or not they measured the interest which is awakened in children by viewing motion pictures as compared with the interest they take in other modes of presentation. Various methods of measuring interest directly might be used, but none of them seem highly satisfactory. The questionnaire method is the prevailing one, but this is recognised generally as being not very reliable. It is undoubtedly true, however, that interest can be measured in a fairly satisfactory way indirectly. Even an information test is to some degree a measure of interest, because the pupil will derive more information from a subject in which he is interested or from a lesson which is presented in an interesting fashion than from one which is dull.[44]

The quotation's focus on 'various methods' notwithstanding, its final subordinate clause suggests that teacher-pupil interaction is pivotal for gauging visual teaching aids' effectiveness. This observation, however, was not followed through. Instead, Freeman advocates that pupils should be tested more reliably. Following the project's methodological reasoning this would have required even stricter adaptive measures, to the extent that teachers and pupils were turned into near-automatons

who provide and respond to carefully selected stimuli.[45] Taking teacher-pupil interaction as a point of departure, I detail a number of issues the collected reports occasion.

Unless one can interrupt its projection at will, film does not allow easy interchange between teacher and class. But what is surprising is that the experiments' reports, irrespective of teaching aid tested, hardly mention normal, formal interactions, such as recitations or quizzes, let alone more spontaneous dialogue. An exception is a '"film-talk" instruction [that] consisted of a single projection during which teacher and pupils carried on a rapid-fire question-answer discussion (…) The pupils were free to comment on anything they did not understand'. This method was compared with a 'slide-talk' and a 'print-talk' on identical topics.[46] Mainly, though, the reports recite instructions, oral lessons, and the reading out of purpose-made essays, all performed by experimenter or teacher alone. Such exclusion of customary discourse signals a wish for results untainted by knowledge gained from questions asked *during* the tests. That this was indeed the avowed goal can be inferred from a number of reports, most clearly one about an experiment designed to compare the effects of moving and still pictures 'by taking sections of the film and projecting them in stereopticon fashion', including the film's subtitles. Here, obviously, the identity of the means of instruction was the overriding consideration (as it was in the Dutch experiments). At the same time, this setup denied those pupils watching the slides the specific advantage of 'analysis and discussion while they are being shown', which turned out to affect their results negatively.[47]

A series of more or less corresponding experiments was conducted to measure the effectiveness of films that presented either 'organised lessons'—meaning 'pictures of objects and activities, an explanation of the pictures, a discussion of their meaning and significance, and additional information'—or merely their 'raw material', the elaboration of which 'should be left to discussion or reading'. It compared the results of pupils watching a film that contained moving images, subtitles, charts, diagrams, and tables with those of alternative instructions; the latter varied from watching the film twice followed by self-study of a text that was illustrated with copies of the film's non-moving elements; an oral lecture identical to the aforementioned text, accompanied by displays of the same supplements; as well as other 'composite forms'.[48] Besides the oral lecture's prepared text, there is no mention of formal, verbal interaction nor of informal exchange, such as spontaneous question-answer sequences.

By the same token, the experiments' arrangements hampered teaching staff to work in their accustomed ways. The unfavourable effect of limiting teachers' repertoire to prepared texts was

hinted at in the report of two experiments in which staff performed in fact a slightly less restricted role. During a series of comparative, practical assignments—making a reed mat and making a pasteboard box—staff functioned as 'demonstration instructor[s]': they showed pupils the making process while verbally drawing 'the attention of the group to the steps in the process'; instructions by slides, stereographs or film were accompanied by the same, simultaneously spoken text. Of all these tests the combined live demonstration and oral explanation—i.e. without visual aids—scored highest. Freeman conjectured: 'The superiority of the demonstration (...) must be in the personal relation of the instructor to the class and the ability of the instructor to adapt himself to the attitude of the pupils'.[49] As the term *personal relation* was not elaborated nor teachers' adaptive moves specified, it remains unclear if staff went beyond the spoken instruction proper and, for instance, addressed individual pupils who appeared to require help. The collected reports suffer overall from a lack of precision of these and other terms cited. To give another example, a report mentioned that 'even though the teacher's verbal instruction closely followed the outline of the film, the presentation was flexible enough to typify the normal classroom situation'. However, no information was given as to what made it normal. Despite the account's detail, its author only mentions one formal, standard teaching method: '[t]he study period was followed by the recitation period'.[50]

An important point to make here is that by generally disregarding instances of 'the normal classroom situation' the scientists' experiments missed ever so many opportunities to confront one of the industry's claims: visual aids will replace teachers. This, after all, had been a major consideration in devising the research programme. In the evaluative section of the book Freeman did not develop the point either, but stated merely that the superiority of demonstrations is 'evidence that the personal presence and activity of the teacher is an effective agency'.[51] Be that as it may, as no non-prescribed— that is, normal—activity, verbal or otherwise, was separately tested to support his statement, Freeman's words effectively remained 'opinion', too.

The opening paragraph of one experiment's report intimated the limits of the programme's approach:

> It is well-nigh impossible to control the complexity of elements in an educational experiment. Hence the critical experimenter must constantly strive to reduce this intricacy to a point where more perfect control of all factors can be obtained. This restriction of the problem has one limitation. The results of the experiments will have a correspondingly narrow application.[52]

The measure to gain 'more perfect control', however, focused on the 'narrow application' precisely: the teaching aid (in this particular experiment two purpose-made films from which subsequently 'sections' for slide projections and stereographs were made.[53]) The reasoning appears to be that with the restrictions imposed on pupils—test group matching and adjusting; completing assignments—and on staff—mostly reading out ready-made texts—the effectiveness of the visual aids could be established without 'noise'. But what is noise to one is standard practice to another. A small detail illustrates the bigger issue: about a test featuring the film Waste Disposal in Cities an experimenter writes:

> The producer of the film made a special effort (…) to show the effect of the entire process of purification on the appearance of the sewage as it left the sand beds, yet four pupils were more impressed by the 'foam' on the sewage than the fact that it was clear and clean. A word of explanation by a teacher at this point (…) would have corrected the mistaken interpretation.[54]

This observation of an understandable misinterpretation apparently was no reason to critically evaluate the choice of film, let alone the experiment as a whole, even though the author acknowledged that a teaching aid's didactic value is less an independent outcome than a result of teachers' interpositions and interactions with pupils. It is only in the programme's evaluations, besides the cited remark of teachers' 'effective agency', that Freeman more candidly asserts the limitations of 'various forms of concrete experience represented in visual education', as they depend on 'the nature of the instruction to be given' (along with 'pupils' previous acquaintance' with a subject). He expands on this statement, writing:

> The contrast which is drawn here is between concrete experience, on the one hand, and the comparing, analyzing, and generalizing operations on the other hand. The contention is that these latter ways of working over experience and of converting raw experience into thought are very much facilitated by language, if they are not, in fact, largely dependent upon it. Certainly communication of general or abstract ideas is very clumsy and difficult without language.[55]

Indeed, to think otherwise is to depart from the standard practice of staff introducing, explaining or framing a teaching aid, of whatever kind, and its content. And not just that. Because what I consider

the second consequential effect of these experiments in situ is that by eliminating interchange with a class and regimenting its 'divergence of abilities' the experimenters deprived themselves of the possibility to observe the operation of the ways the curriculum is customarily organised, discussed, understood, rehearsed, and tested. Thus they dismantled what nowadays one would call the educational dispositif.

## Routines

The term *educational dispositif* is an instance of a pragmatic model of performative arrangements that is constituted of three elements. The first is the *performance* (or *presentation*) whether in an educational, factual, official or entertaining sense, executed by one or more performers delivering an instruction, speech, plea, judgement, lecture, sermon, show, drama, etc., live and/or recorded. Second, the *designated space* where this performance takes place, such as a classroom, courtroom, lecture hall, church or theatre, including their podium technologies, such as lighting, sound amplification or projection facilities and screens, as well as their seating arrangements for, thirdly, the *assemblage of attendees* to whom the performance is addressed. Proposed by Frank Kessler, this pragmatic model of the performative dispositif, while initially applied to the lantern lecture, is sufficiently abstract to describe other manifestations.[56] While his positional designations, or 'poles,' emphasise these elements' interdependence, I prefer to use the more general terms mentioned above. *Performance* replaces what Kessler called the textual pole, as his term does not immediately denote non-verbal or composite performances, particularly in the arts (think of dance, musical concerts, silent film screenings or, indeed, lantern lectures). I replaced the performance context pole with *designated space* to bring out the performative affordances of various venues, whether traditional or unconventional. And I use *assemblage of attendees* instead of user-spectator to accentuate that within an assembly of people gathered at a performative event a fixed or intermittent division of roles may occur (notably in courts of law, church services or classrooms).[57]

These three elements did not just happen to come together, but function in an interdependent and more or less familiar, predictable way. That is to say, each of them creates specific and mutual expectations that are based on custom, reputation, and/or publicity. Indeed, the interdependence of the performative dispositif is a historical, socialised (or socialisable—the model must allow for innovations) process: any of its instances requires more or less narrowly defined rules of deportment

by both performers and attendees as well as more or less narrowly defined spatial arrangements—what one might call specificity conditions. (Of course, as every street artist knows, spaces can be designated on the spot, but it depends entirely on their performative qualities whether or not passers-by decide to become attendees.)

A classroom and its arrangement of desks, seats, and teaching aids (board, wall charts, maps, pointer, models, textbooks, experimental table, language lab software, projection facilities, etc.) allow staff to organise their instruction in distinct ways, including the allocation of tasks or turns at speaking or singing to one, some or all pupils at a time. That this is habitually accomplished is because '[m]uch of what goes on is conditioned by the need to maintain orderly relationships among from 20 to 30 or more persons in a relatively small space. Demands for such order are conveyed to students early, and their socialisation into it is rather thoroughly achieved before the end of the early elementary grades'.[58]

The setups of Freeman's project, however, by shearing all that might interfere with their measurements of educational outcome, show how the significance of these ingrained, interdependent considerations was misjudged. In general, the experimenters seemed to have been unworried that their safeguards might affect established institutional and organisational principles and procedures. Indeed, I should review my earlier statement and propose that rather than lessons—which allow, if not require, verbal interchange—the experiments in effect largely mimicked exams, very formal arrangements in which staff provides briefings, after which pupils are expected to work out the assignments solitarily (with these experiments' additional disadvantage of minimal preparation, which, in its turn, limited the cognitive skills targeted).

In one report, however, an experimenter did express his reservations about the programme's experimental environment:

> [I]t is realized that a teaching problem involves a complex of many factors impossible of absolute control, so that even the 'constants' are variables—and are very far removed from the mechanical identity possible in a physics laboratory. With such shifting data, it seems inappropriate to employ elaborate mathematical computations, whose niceties give a false impression of the accuracy of the data. For the most part, simple averages (means) were used as being most familiar to the teachers, and most appropriate to the degree of accuracy exhibited in the data.[59]

This observation corresponds with a number of hesitant or quizzical remarks—some quoted above— that are strewn throughout the book. I do not think they are critical of the programme's implicit, behaviourist orientation nor of the cooperating schools' teaching practices per se; both being in the mainstream, these choices are warranted. Rather, they appear to query why the programme stopped short of its goal instead of addressing the 'complex of many factors', including teacher-pupil interaction. After all, the latter's deliberate removal for the sake of 'uncontaminated' test scores reveals the experimenters' awareness of it as a routine practice.

Modern-day routines are a relatively recent sociological concern, yet their very everydayness and persistence are not mere experiential facts, but longtime institutional supports as well. Routines and the ways institutions operate are mutually reinforcing phenomena.[60] School life, ever since the spread of compulsory primary education in the late-modern era, is among the most widely experienced institutional routines and recognisably alike over more than two centuries, changes and local differences notwithstanding.[61] From this perspective one of the most astonishing comments in *Visual education* was calling the rivalry that emerged after dividing classes in two sections 'an artificial stimulus'.[62] This view of rivalry as aberrant rather than customary stands for a more general disacknowledgement of the dynamic that goes on within as well as between classes. It ignores competitiveness and ranking as ingredients of pupils' motivation, possibly even a sense of identity during school hours, which in the experiments' more uniformly composed units might have been less conspicuous or, given the transience of the experimental groups, urgent. Creating identical, small groups on the basis of age, IQ, readings skills, etc. could have been appropriate when, for instance, the experiments were meant to recommend changes in the distribution of pupils over classes and concomitant adaptations of a school's curriculum; in other words, changing the routine in order to reform the institution. But that was not the programme's intention. In fact, its rearrangements of pupils were a far cry from contemporaneous, innovative practices, notably those by John Dewey, Maria Montessori, Frederic Burk or Carleton W. Washburne. Moreover, the comment mentioned earlier about children of 'the industrial class' makes one wonder how many categories it would actually take to create a uniform group in the first place—let alone which supposed characteristics of the testees become relevant under what circumstances.

What, then, makes this early-1920s series of pioneering experiments so intriguing, even though their methodology was not quite up-to-date, its ways of using visual teaching aids were often indistinguishable from language-based instruction, while its insights 'were largely ignored

and were not rediscovered until almost two decades later?'[63] The reason, surely, is not to demonstrate the progress made in the past 100 years. Not too long ago two researchers wrote:

> [S]everal decades of research on learner control in computer-based instruction has produced a history of mixed results. (...) [A]n important reason for the lack of consensus in this field was the absence of theoretical models and the poor methodological quality of the empirical studies.[64]

First of all, the shortcomings and objections notwithstanding, for today's reader the conclusions Freeman discusses in *Visual education* are modest and sober, the very opposite of the contemporary educational industry's exaggerated claims; they are not even called conclusions, but interpretations. The first of seventeen of these interpretations is as devastating as it is unassuming, when he writes that '[s]o far as words are concerned, the very constitution of many of the educational motion picture films themselves indicate that their authors find it difficult, if not impossible, to present some subjects, or some aspects of subjects, by means of pictures alone. In some cases they resort to verbal discussion and explanation to a very large extent'.[65] A few lines onwards Freeman concludes—not interprets—that '[t]he present study gives no support to a belief that pictures may be substituted for language'. Rather, its significance consists in the encounter with 'certain kinds of experience of a concrete sort' and, accordingly, he advises to restrict educational films 'to their peculiar province' i.e. the display of moving objects. But even then the test results were not unequivocal.[66] (Film, incidentally, is the main subject in this section; all the other visual methods tested appear in supporting roles at best.)

But the most interesting aspect of this concluding section is its inconsistency, as it bestows praise on standard procedures, notably teacher-pupil interaction, despite its near-complete deletion from the experiments. An exception is the one in which it was found that 'carefully prepared oral comment by the teacher accompanying a motion picture film, contrary to the almost universal opinion of visual education specialists, adds to its effectiveness'.[67] But other remarks concerning teacher-pupil interaction were based on non-tested observations. For example:

> The explanation, discussion, or elaboration of the material which is shown in the film is a function of language. Language can be used fully as effectively if not more effectively by the teacher as by the film. Furthermore, the class should take a large share in the discussion.[68]

And in his final point, in response to the objection that visual aids might make education 'too easy' by merely having a subject 'presented' to pupils, Freeman recommends that a subject should be 'a working part of [their] mental machinery. To provide for this we must encourage discussion, independent reading, problem and project work, and the like.'[69]

These interpretations reveal *and* justify the use of educational dispositif in relation to these experiments, despite the term's much later introduction. In particular the book's acknowledgment of a number of routines during which teacher and pupils engage each other in talk (in 'language'), whether regulated, as in recitation or quizzes, or more freeform, as in discussions or Q&As, confirms the phenomenon of pragmatic interdependence and an awareness of its historical continuity, albeit by another name. It is one more reason why the reports collected in *Visual education*, their attempted innovative approach notwithstanding, provided no strikingly novel recommendations.

Recently, two Dutch educators, on the YouTube channel *De Nieuwe Wereld* (The New World), discussed their experiences with online teaching during the lockdowns of the COVID-19 pandemic.[70] It was a discussion reminiscent of *Visual education*, as both speakers itemised the drawbacks of virtual education: a disbanded audience (absences, e.g. by switching off the screen or simply opting out), in dispersed, non-designated spaces and their various conventions of deportment (students dressed in pyjamas, caressing their pets, asides to housemates, etc.), and the lack of focused interaction and other obstacles put in the way between teacher and pupils (e.g. screen sharing, no acknowledged eye contact). Today, when the notion of educational dispositif is widely recognized, one would hope it may function as an analytical tool to challenge the claims made by virtual teaching's advocates and businesses.

## Notes

1. This work is part of both the research project *Praktiken des Lehr- und Unterrichtsfilms in Österreich*, at the Ludwig Boltzmann Institut für Digital History, Vienna, funded by the Austrian Science Fund (FWF), project number P 32343-G, and the research project *Projecting Knowledge: the Magic Lantern as a Tool for Mediated Science Communication in the Netherlands, 1880–1940*, at Utrecht University, financed by the Dutch Research Council (NWO), project number VC.GW17.079/6214.

2. Frank N. Freeman, "Individual Account of the Experiments and their Results", in *Visual Education: a Comparative Study of Motion Pictures and Other Methods of Instruction,* ed. Frank N. Freeman (Chicago: University of Chicago Press, 1924), 15. See also: Paul Saettler, *The Evolution of American Educational*

*Technology*, 2nd ed. (Greenwich, CT: Information Age Publishing, 2004 [1990]), 224–225. 'The Commonwealth Fund was established in 1918 with the broad charge to enhance the common good.' Nowadays its focus is health care; https://www.commonwealthfund.org/about-us.

3.  Frank N. Freeman, "Introduction: Problem and Method of Procedure," in *Visual Education,* Freeman, 6. Much of this introduction comes from his paper read at the Fourth Annual Meeting of the National Academy for Visual Instruction, Cleveland, February 27, 1923; see: "The Methods of Investigation in Visual Education," *The Educational Screen*, II, no. 3 (March 1923), 103–108.

4.  F. Dean McClusky, "Comparisons of Different Methods of Visual Instruction," in *Visual Education,* Freeman, 84.

5.  Freeman, "Introduction," 6–7; Freeman, "Individual Account," in *Visual Education,* Freeman, 28–29.

6.  As noted, I will mention these experiments only intermittently. For a more extensive discussion I refer the reader to: Jamilla Notebaard and Nico de Klerk, "The Photographic Turn in Visual Teaching Aids: Films and Slides for Schools in the Netherlands, 1911–1926," in *Learning with Light and Shadows: Educational Lantern and Film Projection, 1860–1990,* eds. Nelleke Teughels and Kaat Wils (Turnhout: Brepols, 2022), 77–98.

7.  Lorraine Daston and Peter Galison, "The Image of Objectivity," *Representations*, no. 40 (Autumn 1992): 82.

8.  G. Révész and J.F. Hazewinkel, "Over de didactische waarde van de projectielantaarn en de bioscoop," *Paedagogische Studiën*, 4 (1923): 33–67; J.F. Hazewinkel, "Over de didactische waarde van de projectielantaarn en de bioscoop," *Paedagogische Studiën*, 4 (1923): 169–184. The first of these articles was partly translated into English as "The Didactic Value of Lantern Slides and Films," *British Journal of Psychology*, 15, no. 2 (1924): 184–197.

9.  Révész and Hazewinkel, "Didactische waarde," 37. See also: Notebaard and de Klerk, "The Photographic Turn," 77–98.

10. Examples of the *Kinoreform* literature consulted are: Albert Hellwig, *Schundfilms; ihr Wesen, ihre Gefahren und ihre Bekämpfung* (Halle: Buchhandlung des Waisenhause, 1911); Konrad Lange, *Das Kino in Gegenwart und Zukunft* (Stuttgart: Ferdinand Enke, 1920).

11. Saettler, *Evolution*, 144–145.

12. Saettler, *Evolution,* 123–177; Wendell G. Johnson, *"'A Happier Way of Learning': the Visual Instruction Movement, 1918–1928"* (PhD diss., Northern Illinois University, 2015), 1–3, 20–23.

13. Freeman, "Introduction," 3.

Concerns about such claims had also been voiced by J. Paul Goode, Professor of Geography at the University of Chicago, in an address to the National Education Association: 'No one of [the visual devices] or all of them

will ever take the place of the live, earnest, competent teacher. Moreover, the best of teachers will have to be initiated into the best methods of using the graphic material. All of the visual devices together will not remove the need of effort, or work, on the part of the pupil.' See his: "The Scope and Outlook of Visual Education," *Journal of Education*, 91, no. 21 (May 20, 1920): 567. Nonetheless, Goode did advocate the use of visual methods, particularly in geography, referring to a 1914 survey by the Russell Sage Foundation that showed a correlation between a drop in 'failures' and the use of stereograph sets; Goode, "Scope and Outlook," 567–568.

14. Freeman, "Introduction," 4.

15. Freeman, "Introduction," 5.

16. Quoted in: Saettler, *Evolution*, 98.

17. A.P. Hollis, "The Effectiveness of the Motion Picture Used as an Introduction or as the Summary," in *Visual Education,* Freeman, 275.

18. Saettler, *Evolution*, 224.

19. With regard to film specifically, the quoted critical comments do not therefore merely reflect what Masson has called educational film's 'evolution away from [its] initial examples and towards a more purposive, audience-specific approach to the production and selection of such films'. The prominence of established, non-dedicated commercial and non-commercial organisations in the American educational film business and their civic, political, and/or economic interests surely complicated this process; Eef Masson, *Watch and Learn: Rhetorical Devices in Classroom Films after 1940* (Amsterdam: Amsterdam University Press, 2012), 227.

20. Evidence of this motley character of the business is, for instance, the catalogue *1001 Films: a Reference Book for Non-Theatrical Film Users* (Chicago: Moving Picture Age, 1920), https://archive.org/details/1001filmsarefere00unse.

21. Goode, "Scope and Outlook," 567; McClusky, "Comparisons of Different Methods," 85.

22. Johnson, "*A Happier Way*," 53–55.

23. Saettler, *Evolution*, 138.

24. McClusky, "Comparisons of Different Methods," 94. However, this 'situation' does not distinguish, in Masson's words, between 'occasional' and 'embedded' in-class film screenings, only the latter of which she calls 'pedagogical'; *Watch and Learn*, 110–114.

25. Frank N. Freeman, Lena A. Shaw and D.E. Walker, "The Use of a Motion Picture Film to Teach Position and Penholding in Handwriting," in *Visual Education,* Freeman, 290–292; F. Dean McClusky and H.Y. McClusky,

"Comparison of Motion Pictures, Slides, Stereographs, and Demonstration as a Means of Teaching how to Make a Reed Mat and a Pasteboard Box," in *Visual Education,* Freeman, 310–311.

26.  Freeman, "Introduction," 9.

27.  McClusky, "Comparisons of Different Methods," 98.

28.  Carolyn Hoeffer and Edna Keith, "An Experimental Comparison of the Methods of Oral and Film Instruction in the Field of Health Education," in *Visual Education,* Freeman, 347.

29.  While not all tests were done immediately after the presentation of the materials, the Dutch experimenters [see note 6], by contrast, deviated from this, what they called 'the usual procedure' altogether. Instead they asked pupils 'to write down what they had observed after the lapse of a week (…). This we did because our aim was to obtain evidence as to the relative hold each method of representation had on the [sic] memory. The essays were, therefore, written when the impressions of the mind had lost some of their original freshness and the ability to reproduce the facts had become relatively permanent.' Révész and Hazewinkel, "Didactic Value," 188.

30.  Freeman, "Introduction," 3.

31.  McClusky, "Comparisons of Different Methods," 146.

32.  McClusky, "Comparisons of Different Methods," 94.

33.  McClusky, "Comparisons of Different Methods," 101–102; 159.

34.  From a retrospective review of the abovementioned Dutch experiments: Jan Elen, "Beweging en stilstand: anders en toch weer niet," *Pedagogische Studiën*, 90 (2013): 28.

35.  G.T. Buswell, "Methods of Teaching," *Review of Educational Research*, 3, no. 4 (October 1933): 317.

36.  Freeman, "Individual Account," 35–38; F.D. McClusky and H.Y. McClusky, "Comparison of Six Modes of Presentation of the Subject-Matter Contained in a Film on the Iron and Steel Industry and One on Lumbering in the North Woods," in *Visual Education,* Freeman, 242–243.

37.  See respectively: Haddon W. James, "The Relative Effectiveness of Six Forms of Lesson Presentation: Film, Lecture, Still Picture, Film-Lecture, Film-Music, and Reading, with Particular Emphasis on the Suitability of Different Types of Material for Film Presentation," in *Visual Education,* Freeman, 209; McClusky and McClusky, "Comparison of Motion Pictures," 312.

38.  Freeman, "Introduction," 11–12.

39.  Freeman, "Introduction," 11. [my emphasis]

40.  Hoeffer and Keith, "Health education," 346; 370.

41.  E.H. Reeder and Frank N. Freeman, "A Comparison of the Teaching Value of Film and of Oral Instruction in the Case of Two Short Projects and One Longer Project," in *Visual Education,* Freeman, 182.

42.  Reeder and Freeman, "Comparison of the Teaching Value," 175.

43.  Freeman, "Individual Account," 15. A text film (or school film) 'is a film which has been produced designedly for a specific use in teaching a particular subject.' Frank N. Freeman, "Requirements of Education with Reference to Motion Pictures," *The School Review*, 31, no. 5 (May 1923): 342.

44.  Freeman, "Introduction," 12–13.

45.  Although largely implicit in the collected reports, notions of learning as stimulus-induced responses were a major theoretical reference at the time, notably through the work of psychologist Edward L. Thorndike during the preceding two decades, which originated in his laboratory studies of animal behaviour; Saettler, *Evolution*, 54–56; Frank N. Freeman, "The Relation of Educational Psychology to Educational Sociology," *Journal of Educational Sociology*, 3, no. 10 (June 1930): 582.

46.  McClusky and McClusky, "Six Modes," 231–232.

47.  Freeman, "Individual Account", 33–34; see also: James, "Six Forms," 223–226.

48.  Freeman, "Individual Account," 38–40. See also: Freeman, E.H. Reeder and Jean A. Thomas, "An Experiment to Study the Effectiveness of a Motion Picture Film which Consists Largely of Tables, Maps, and Charts, as a Means of Teaching Facts or Giving Abstract Information," in *Visual Education,* Freeman, 258–274.

49.  Freeman, "Individual Account," 52; McClusky and McClusky, "Comparison of Motion Pictures," 333–334; 313.

50.  McClusky, "Comparisons of Different Methods," 87; 158–159.

51.  Frank N. Freeman, "Final Summary and Interpretation," in *Visual Education,* Freeman, 78.

52.  McClusky and McClusky, "Comparison of Motion Pictures," 310.

53.  McClusky and McClusky, "Comparison of Motion Pictures," 311.

54.  McClusky, "Comparisons of Different Methods," 135.

55.  Freeman, "Final Summary," 69.

56.  Frank Kessler, "The Educational Magic Lantern Dispositif," in *A Million Pictures: Magic Lantern Slides in the History of Learning,* eds. Sarah Dellmann and Frank Kessler (New Barnet: John Libbey, 2020), 181–191.

57.  A division of roles also occurs in stage or broadcast *performances* that feature emcees or presenters, whose task it is to periodically warm up an audience so that the performers they introduce—a lecturer or a line-up of acts (as in stand-up comedy, circus, song festivals, etc. as well as award ceremonies)—can immediately focus on their act. In fact, they often bracket the entire performative event by opening and closing

remarks. And then, of course, there are those theatrical events in which performers attempt to bridge the divide between themselves and their public; see e.g. Erika Fischer-Lichte, *Ästhetik des Performativen* (Frankfurt am Main: Suhrkamp, 2017 [2004]), 63–82.

58.  John I. Goodlad, *A Place Called School: Prospects for the Future* (New York: McGraw-Hill, 1984), 123.

59.  Hollis, "Effectiveness of the Motion Picture," 276–277.

60.  Anthony Giddens, *The Constitution of Society: Outline of the Theory of Structuration* (Cambridge – Malden: Polity Press, 2014 [1984]), xxiii–xxiv, 25–28.

61.  This has been called *the grammar of schooling*. In its American form it is defined as "[s]uperintendents, principals, and teachers maintain[ing] the familiar array of buildings housing classrooms along corridors, curriculum divided into chunks by grade level, and students taking periodic tests"; see: Larry Cuban, "Reforming the Grammar of Schooling Again and Again," *American Journal of Education* 126, no. 1 (August 2020): 670; see also: John Goodlad, *A Place Place Called School: Prospects for the Future* (New York: McGraw-Hill Book Company, 1984), 123–124; Agustina S. Paglayan, "The Non-Democratic Roots of Mass Education: Evidence from 200 Years," *American Political Science Review*, 115, no. 1 (2021): 179–198.

62.  James, "Six Forms," 200.

63.  Saettler, *Evolution*, 225.

64.  Huib K. Tabbers and Bastiaan de Koeijer, "Learner Control in Animated Media Instructions," *Instructional Science*, 38, no. 5 (2010): 442.

65.  Freeman, "Final Summary," 70.

66.  Freeman, "Final Summary," 70; 75; 77; 79.

67.  Freeman, "Final Summary," 78; McClusky and McClusky, "Six Modes," 247.

68.  Freeman, "Final Summary," 79.

69.  Freeman, "Final Summary," 80.

70.  Ad Verbrugge and Christiaan Alting von Geusau, "Zelfstandig denken bedreigd, getuige ook de coronacrisis," De Nieuwe Wereld, May 12, 2022, 59:50, https://www.youtube.com/watch?v=N2oBFCgAX-8.

## Biography

**Nico de Klerk** has a BA in English (Leiden University, 1983) and an MA in Discourse Analysis (University of Amsterdam, 1986). In 2015 he completed his PhD at Utrecht University, published in 2017 as *Showing and telling: film heritage institutes and their performance of public accountability*, partly based on his

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