EDUCATION AND HEALTH STANDING COMMITTEE

INQUIRY INTO CHANGES TO THE POST-COMPULSORY CURRICULUM IN WESTERN AUSTRALIA

TRANSCRIPT OF EVIDENCE TAKEN
AT PERTH
WEDNESDAY, 23 NOVEMBER 2005

SESSION THREE

Members

Mr T.G. Stephens (Chairman)
Dr E. Constable
Mrs D.J. Guise
Dr K.D. Hames
Mr J.N. Hyde
Mr T.K. Waldron
Mr M.P. Whitely

Hearing commenced at 10.36 am

WEBER, MRS JULIE ANN
President, Science Teachers Association of Western Australia,
Box 1178,
Rockingham 6168, examined:

The CHAIRMAN: Welcome to the committee, Mrs Weber. The committee hearing is a proceeding of Parliament and warrants the same respect that proceedings in the house itself demand. Even though you are not required to give evidence on oath, any deliberate misleading of the committee may be regarded as a contempt of Parliament. Have you completed the "Details of Witness" form?

Mrs Weber: Yes, I have.

The CHAIRMAN: Do you understand the notes attached to it?

Mrs Weber: Yes.

The CHAIRMAN: Did you receive and read an information for witnesses briefing sheet regarding giving evidence before parliamentary committees?

Mrs Weber: Yes, I did.

The CHAIRMAN: Thank you for appearing before the committee. Do you want to take the opportunity to make some opening remarks to the committee before committee members ask you questions?

Mrs Weber: Just briefly. The Science Teachers Association of Western Australia has approximately 750 members in both the government and non-government school systems. We generally support the changes that are being made, because they will allow more flexibility for students to study science courses. In the past, the majority of students have been left out of science courses because all but one of our subjects have been TEE courses. A lot of students are not capable of doing the TEE, so they do not have the opportunity to do our courses. We have some concerns about the assessment side of it, but generally we support what is being proposed.

The CHAIRMAN: Are there any reasons for your support? Are you basically saying that these changes create fresh opportunities for people who are not going to do TEE to engage in the study of science?

Mrs Weber: Yes. We feel that science is important for all students, especially students who will enter a lot of the TAFE courses, specifically those who want to become automotive mechanics or electricians or who want to work in human services or the food industry. These students generally select subjects that enable them to go to TAFE. If they selected a TEE course, they might not do as well. Therefore, they opt to do subjects that will give them better grades to get into TAFE. If they decided to do a TEE course and got C or D grades, this would disadvantage them in getting into TAFE. However, these courses at TAFE require some science background. Currently, the science background that these students receive in years 11 and 12 is very limited because they miss out on being able to do physics, chemistry or human biology.

The CHAIRMAN: It has been said that there has been a general drift away from students taking science courses. Is this a change that you would be confident about turning that around?

Mrs Weber: We hope that it would, because we would be able to tailor courses to suit the needs of students in our schools. Different schools have different students with different needs. I am in a

small country school. Very few of our students sit the TEE. The majority of our students consider TAFE entry or undertake vocational courses. It is very hard to offer a wide range of subjects for all students at our school. This would allow more flexibility for schools to cater for all students who have an interest in, say, science.

Mr J.N. HYDE: At your small school, or any other, the top kid who does chemistry would normally go to UWA, get his degree and then work at the CSIRO in Bentley and be able to charge the United Arab Emirates $2 000 for two days' work in assessing bauxite. Would that kid from your country school be impeded as an elite person studying chemistry by going through OBE?

Mrs Weber: No, because depending on what unit he decides to do, that student would still be able to study his chemistry course. In my school, if we have a small number of students, we utilise the Schools of Isolated and Distance Education to enable those students to do TEE courses. We currently have students in lower school who do things like accounting through SIDE. In the past we have had students do physics through SIDE. However, we have been able to get enough students to actually have a class now. Smaller schools have been flexible for a long time in the way in which they approach the delivery of courses. If there was only one student in my school who was capable of doing 3A and 3B units in year 12, the school would look at something like SIDE to enable the student to get what he needed.

Mr J.N. HYDE: Some of the misinformation against OBE is that the highest achievers will not be able to achieve at the same level. Do you have any evidence to back that up?

Mrs Weber: No. If the assessment is sorted out, and specifically the assessment tasks and the way they are written, it would allow those students to be able to reach the higher level.

Mr J.N. HYDE: That is, to excel, just as they can now.

Mrs Weber: Yes; to excel, just as they can now. There is some need in, say, the sciences and maths to specify definite skills, content etc that is required because it is more specific as you get to those higher levels. That part needs to be addressed to give teachers some guidance on which skills and concepts are important and what students need to know. At the higher level, students need to be able to relate that knowledge to other situations and to apply it. The courses need to be specific about what it is that students need to know. There is no reason that students cannot reach those higher levels. Students now in year 10 in schools are reaching high enough levels. From what I have heard recently, UWA is looking at entry into its courses. There is no reason that cannot happen.

Mr J.N. HYDE: The first graduate of chemistry under OBE will turn up at UWA in 2008. Your teachers will have all of next year to get the preparation right. Are you lobbying the Curriculum Council to make sure that is happening?
[10.45 am]

Mrs Weber: Yes, we have been. We also have members on the ARMs panel. STAWA is also investing in preparing resources for teachers to give them something to guide them with what they are doing. We are looking at spending $50 000 next year on developing resources for different units in all courses for the year 11s in 2007 - 1A and 1B and 2A and 2B. Also, we are hoping to receive some funding and to work with WestOne to develop resources for the science courses of study. The Science Teachers' Association has done a lot of professional development over the years as new information about courses of study has come along. Over the past few years we have been doing workshops with teachers on looking at how to design units. On Friday we have a conference at Murdoch University, and the workshop on the human biology courses of study and planning and development of work was the first to fill up. Teachers are keen to do that workshop. A lot of the members of our council are involved in writing these documents for the Curriculum Council, so we get the feedback about what is happening and we are able to pass on that feedback.

Mr M.P. WHITELY: The change to outcomes-based education is only a part of this change. My understanding is that when you get to levels 3A and 3B, the change is fairly minimal. It will be much like the current year 12 curriculum. The specific content will be spelt out and a student will get a mark out of a specific level.

Mrs Weber: Is that at the end of year 12?

Mr M.P. WHITELY: Yes. It will allow ranking. There will not be a need to redesign the year 12 chemistry course, for instance. The most significant change will be at the 1A and 1B level, where a new chemistry course will be designed for kids going on to TAFE. That is where the revolution is and that is less content specific.

Mrs Weber: I think there will be significant changes to 1A and 1B levels for year 12 as well, because it is not as content specific as the courses have been. The chemistry and physics courses are content specific and full of information. You cannot miss any classes because there is so much to get through. The current courses have actually removed a lot of that content. It allows the teachers to choose the content that is relevant to the context that they are teaching. That is why we are looking at the Curriculum Council prescribing certain concepts or skills that students will need so that the teachers are sure they are teaching what may be in the exam.

Mr M.P. WHITELY: Teachers will teach to the final exam and the final exam will test specific understanding and content.

Mrs Weber: The final exam is for the students who want to go to university.

Mr M.P. WHITELY: The majority will do level 3A and 3B.

Mrs Weber: Yes, but it means that more students will be able to study science at the lower levels; for example, in year 11 doing levels 1A and 1B and maybe levels 2A and 2B.

Mr M.P. WHITELY: Going to the top: how is it made content specific? We hear that term all the time. We have heard that there will be concepts, but in different contexts. What does that mean?

Mrs Weber: Currently we are working with the Chamber of Minerals and Energy and the mining industry to use a mining context, where we will look at the process of extracting minerals, etc. Instead of teaching what is an equation and what is a process, it is put into context for the students, especially with the resource industry being such a big thing in Western Australia. Another group of people at the University of Western Australia is looking at the wine industry and how winemaking can be put into context for chemistry.

Mr M.P. WHITELY: Do the same principles apply?

Mrs Weber: We will still be using chemical equations and looking at the different reactions, but it is put in a way that students may see the relevance of it.

Mr M.P. WHITELY: Is that a change at the 3A and 3B level?

Mrs Weber: Across all levels of science courses of study. It may become more familiar and be more attractive to the students.

Mr M.P. WHITELY: It becomes more relevant and less about learning by rote.

Mr T.K. WALDRON: You mentioned that you had some concerns about the assessment requirement. Is your concern about the workload that will be required? What are your concerns?

Mrs Weber: I have concerns about the type of assessment that will be required. The exam is a big concern. Some of my concerns have been addressed now; that is, that they will not use the exam to statistically moderate the school. We believe the exam and school mark should stand alone. The exam should not have any moderation. The exam is a snapshot of what they have been learning, but evidence has been collected over a year to show the level the students are at.

I am concerned about the type of assessment tasks they will be looking for. I know that is being worked on. The Department of Education and Training has a process in place for their schools to help them with that. The Curriculum Council is looking at the assessments and writing assessment tasks.

Mr T.K. WALDRON: You said that some of your concerns have been addressed. Are you confident that the rest will be addressed?

Mrs Weber: We are hoping they will. Once we have the assessment task, the big issue is consistency of teachers' judgments. At the moment, with the changes that have occurred in the lower school, schools have got together to see whether consistent judgments are being made across the schools. That strategy has been good in getting teachers to realise that they are doing the right thing and that what their kids are doing is the same as what the kids in another school are doing. The process through which schools get together and look at each other's work should be in place. Currently consensus meetings are held at which teachers bring along the year 11 and 12 work. That process should continue.

Mr M.P. WHITELY: Did you say the exams will not be used to moderate schools?

Mrs Weber: We have been told that the exam will not be used to statistically moderate the school mark. However, they will have a general aptitude test, and that test may be used to moderate the school mark until everything is sorted out.

Mr M.P. WHITELY: Scaling and moderation are different. Scaling is comparability across subjects and allows science students to be compared with whatever. Moderation is to make sure that a school does not mark too generously. In other words, they might give every kid 80 per cent, when the reality is they are performing at 50 per cent. Moderation has always been a feature, not of an individual school mark but of a set of marks from a school. Is that not going to happen?

Mrs Weber: I understand that the mark that students get to get a ranking will be 50 per cent of the exam mark and 50 per cent of the school mark, which is now the case. Currently, the exam is used to moderate student marks.

Mr M.P. WHITELY: To determine how a school performs in an exam.

Mrs Weber: We have been informed that this will not happen now. They will know from the general aptitude test whether students are getting marked high or low and will scale that.

Mr M.P. WHITELY: The general aptitude test tells you about ability; it does not tell you about performance. It should be moderated on performance. If an average kid does incredibly well, he should not be penalised against the bright kids whose performance is average. A scaling test is a test of general aptitude.

Mrs Weber: It is my understanding of what I have been told.

Mrs D.J. GUISE: From the information we were given I notice your organisation says it will conduct professional development for science teachers to help them implement the change. I take it that that is over and above what is on offer from the Curriculum Council and the department. Have you undertaken any at all to date; and if so, in what capacity and what are your plans for the next 12 months?

Mrs Weber: STAWA runs a professional development program each semester. We offer workshops for teachers and they usually take place during school time. Teachers apply to go to that and schools pay for their relief etc. Over the past few years we have been offering workshops to teachers to do with the courses of study. We have people from the Curriculum Council come in and talk about the structure of the courses and the types of context that can be used. Last year, we had workshops for each of the courses that we had draft versions for. Teachers looking at context and plan how they could do units in those courses. We hold two conferences a year for secondary teachers. One is a weekend conference at Muresk in May and another conference is in November.

This year's November conference will be held this Friday at Murdoch University. Some of the workshops offered there are related to the courses of study. We have found over the past couple of years that teachers are choosing to attend these workshops, and they have been full.

Mrs D.J. GUISE: Does your organisation have a view that first-year teachers may require additional PD to top up what they have learnt as part of their teacher training as they approach the changes to post-compulsory education? Does you organisation have any intention of specifically homing in on that group?

Mrs Weber: As part of our professional development program, each year we run workshops in the April holidays for beginner teachers. A graduate teacher coming into this system still needs extra support and help with upper school courses. Whichever way they come in - they might have gone through the system - they still need that assistance if they have not taught a particular subject. Many science teachers have not done year 11 or 12 chemistry or physics.

Mrs D.J. GUISE: You need to do that anyway.

Mrs Weber: They need to have that information or the support of someone else to help them. Sometimes that is not easy when they are sent to a school where they are the only physics or human biology teacher; therefore, they have to find support from someone to guide them.

Dr E. CONSTABLE: I am interested in the figures of enrolments in various subjects in your submission. Is the association confident that the numbers will grow with these changes?

Mrs Weber: We feel that they will. We feel that a lot of students want to do some of the sciences. They are really interested in chemistry, physics or human biology, but they are not able to get a pass in the current courses because they are very demanding. A lot of that is because the courses contain so much information that the teachers have to get through that they do not have the time to wait for the students who take longer to learn to catch up. By using these courses of study, the teacher can target them to the needs of his students. If they are not capable of getting to the higher concepts, they can start at a lower level. There are lots of students who are interested in science, but they are not capable of passing the current TEE subjects.

Dr E. CONSTABLE: Are those students doing senior science now?

Mrs Weber: Not necessarily, because a lot of students do not see senior science as an option to enable them to keep going in science. They like chemistry, physics or human biology. Senior science covers all the disciplines of science. We believe that we will pick up more students in chemistry, physics and earth environmental sciences than in integrated science. Students will be able to pick their interests rather than go to senior science because that is the only subject that is not a TEE subject.

Dr E. CONSTABLE: I find those comments interesting because my assumption is that the numbers in science subjects will go down, because, with the 50 courses being treated equally, students may well decide that physical education or media studies are more to their liking. It will be very interesting to see what happens.

Mrs Weber: I see it from that perspective. It will depend on whether what they want to go into when they leave school requires a science. Now there is not a requirement to do maths, science or humanities.

Dr E. CONSTABLE: It will be worth looking at.

Mrs Weber: It is an option, but we might pick up some of the students in some of the sciences, maybe not chemistry or physics but other sciences, if they have an interest.

[11.00 am]

Dr E. CONSTABLE: It is really important because fewer and fewer people want to teach science and the need for scientists in the community is obvious. It will be very interesting.

Mrs Weber: We really need to promote our subject.

Mr M.P. WHITELY: Would the current system not work more in that way? If a student wants to enter TAFE, for example, and they want an A, they would choose what is considered to be an easier subject because it is easier to get an A.

Mr J.N. HYDE: Given that globally we will have more students in year 11 and eventually year 12 and that science teachers are already as scarce as hen's teeth, does the association have any projections? Under the existing system at the moment will we have enough science teachers for next year and, more importantly, for 2007?

Mrs Weber: We are already short of science teachers this year. I know of schools that have not been able to replace science teachers this semester because there is none available. We know that there is a shortage. There are not many science teacher graduates in the universities at the moment. There is a real need to push people to go into science teaching. It is really hard to do. Many people go into sciences because they are competing against places at university and occupations that students see will earn them more money in the short term. A lot of scientists do not earn big money straight away; a lot of them may never earn a lot of money. Some occupations that the more able students can go into will earn them more money up front. We need to promote science as an available option.

Mr J.N. HYDE: Yes, that is true in the long term, but I am interested in the short-term response. We heavily recruit doctors from overseas to make up our deficit. At the moment China has an excess of scientists with doctorates. There are about 400 000 extra Chinese who speak good English getting doctorates in the sciences each year. It makes sense to me that if we send iron ore to China, we should get back some science teachers in exchange.

Mrs Weber: Recruitment is not necessarily our role because we do not employ the teachers. However, we have had a lot of teachers from overseas teaching science but there are issues of English language competency and knowing how the system works. They are coming from places where they expect the kids to behave the same as they do in their country. They just do not end up lasting in the schools. Being in a country school, we see a lot of those teachers. That is a big issue. When we get teachers from overseas, we find there are problems with their English language competency and also their expectations of students. That does not just happen here in Australia. I was in England a few years ago and found they had the same issue with overseas teachers in their schools.

The CHAIRMAN: What are the basic prerequisites for a science teacher being ready to teach the new framework for years 11 and 12? What do they need to have available to them and how soon before the commencement of that teaching?

Mrs Weber: They will need to have some clear guidelines of what to teach. There had not been clear guidelines of what sort of stuff needed to be taught in K-10. Teachers just had these general documents. Now they have curriculum guides etc. Teachers have a better idea. Those new teachers who go to schools where they are the only science teacher and science may not be their area have some guidance now. There should be some specific guidance about what to teach in the actual documents. They also need some examples of the different types of assessments for students. I am not talking about setting the exams but we have to assess as we go along to see how students are going and what we need to do. Eventually the teachers will want a copy of an exam so they can see what they are aiming to take their kids to if their students will be doing units 2A and 2B and want to sit the exam.

The CHAIRMAN: How far out from the commencement of that course of study should a teacher have those basics?

Mrs Weber: They really need to have them the year before the courses actually come in. For those science subjects coming out in 2007, they would need to have those things next year so they could start planning their courses.

The CHAIRMAN: Thank you very much for your time this morning. Thank you for being available for the committee.

Hearing concluded at 11.05 am

_____