

Evaluation of Coswell's 1952 "Significant curriculum issues" using mathematical logic

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Abstract: From Coswell's seminal paper of 1952, we evaluate 11 significant curriculum issues, then group them into the arbitrary categories of: (1) Learner-Learned (p,q); (2) Accountability of school (r,s,t); (3) Unit of value (u,v,w); and (4) Identity of process (x,y,z). We do not assume weighting factors, so as to avoid AI networking issues. We evaluate the conjecture that (3) implies (2) implies (4) implies (1). The conjecture is *not* tautologous and refuted. However the conjecture is also *not* contradictory to mean some combination of sequents may be discovered to produce a theorem to justify Coswell's approach as more than an hypothesis.

We assume the method and apparatus of Meth8/VL4 with Tautology as the designated *proof* value, **F** as contradiction, **N** as truthity (non-contingency), and **C** as falsity (contingency). The 16-valued truth table is row-major and horizontal, or repeating fragments of 128-tables, sometimes with table counts, for more variables. (See ersatz-systems.com.)

LET:

Variable	Assignment
p	The learner as the student receiving curriculum
q	The learned as the teacher sending curriculum
r	Responsibility of the school
s	Role of the school in the community
t	Capacity of the school for needs of all, extended opportunities
u	Economical unit value as driver ed, occupational ed
v	Political unit value as democracy, fascism & socialism, monarchy, republic
w	Relational individual value as counseling of unstable, family unit ed, sex ed
x	Identity of the planner.
y	Identity of the elements as planned.
z	Identity of the educational plan.

\sim Not, \neg ; + Or, \vee , \cup ; - Not Or; & And, \wedge , \cap ; \ Not And;
 $>$ Imply, greater than, \rightarrow , \vdash ; $<$ Not Imply, less than, \in
 $=$ Equivalent, \equiv , \vDash ; @ Not Equivalent, \neq ;
 $\%$ possibility, for one or some, \exists , \diamond , M ; # necessity, for every or all, \forall , \square , L ;
 $(p=p)$ **T** as tautology; $(p@p)$ **F** as contradiction;
 $(\%p<\#p)$ **C** as contingency, Δ ; $(\%p>\#p)$ **N** as non-contingency, ∇ ;
 $\sim(y < x)$ ($x \leq y$), ($x \subseteq y$).

From: Caswell, H. L. (1952). Significant curriculum issues.

Association for supervision and curriculum development. NEA.

We group variables defined from Caswell's selections as affecting curriculum into four categories:

- (1) Learner-Learned (p, q);
- (2) Accountability of school (r, s, t);
- (3) Unit of value (u, v, w); and
- (4) Identity of process (x, y, z).

We assume no variable or category is weighted, as in AI expositions.

We make arbitrary assumptions in applying the implication operator as follows.

For (3), the political unit implies the economic unit implies the individual value. (5.1)

$$((v>w)>u) = (p=p) ;$$

$$\mathbf{FFFF\ FFFF\ FFFF\ FFFF\ (6)}, \mathbf{TTTT\ TTTT\ TTTT\ TTTT\ (10)} \quad (5.2)$$

For (2), the role of the school in the community implies the responsibility of the school implies the capacity of the school. (6.1)

$$((s>r)>t) = (p=p) ;$$

$$\mathbf{FFFF\ FFFF\ FFFF\ FFFF\ (8)}, \mathbf{TTTT\ TTTT\ TTTT\ TTTT\ (8)} \quad (6.2)$$

For (4), the identity of the elements planned implies the identity of the planner implies the identity of the educational plan. (7.1)

$$((y>x)>z) = (p=p) ;$$

$$\mathbf{FFFF\ FFFF\ FFFF\ FFFF\ (32)}, \mathbf{TTTT\ TTTT\ TTTT\ TTTT\ (32)} \quad (7.2)$$

For (1), the learner implies the learned. (8.1)

$$(p>q) = (p=p) ;$$

$$\mathbf{TFTT\ TFTT\ TFTT\ TFTT\ (64)} \quad (8.2)$$

We proceed to build this conjecture:

For (3) > (2) > (4) > (1), unit of value implies accountability implies identity of process implies learner-learned. (9.1)

$$(((v>w)>u)>((s>r)>t))>((y>x)>z)>(p>q) ;$$

$$\mathbf{TTTT\ TTTT\ TTTT\ TTTT\ (44)}, \mathbf{TFTT\ TFTT\ TTTT\ TTTT\ (20)},$$

$$\mathbf{TFTT\ TFTT\ TFTT\ TFTT\ (64)} \quad (9.2)$$

Eqs. 5-9 are *not* tautologous. Therefore our conjecture of Eq. 9.1 is refuted, but not as contradictory.

What follows is that manipulation of Eqs.1-9 may disclose a subsequent theorem to map Coswell's significant curriculum issues as a theory.